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CONTENTS AND DIGEST

State Health Organization. Charles V. Chapin, M.D., Providence, R. I....699

A strong executive the first essential. How to obtain and keep such a man. Avoidance of political entanglements. Qualifications of an executive. Rule making. Functions and powers of state health board. Vital statistics. Control of communicable diseases. Diagnostic laboratory. Child hygiene. Supervision of water and sewerage. Public health education. Local health supervision and state control. Compensation of health officials.

Some Essentials to the Development of Efficient Health Organization. J. W. Kerr, M.D., Washington, D. C.....703

Needs of health organizations in cities and states, and principles which should be utilized in their development.

Hay-Fever: Its Cause and Prevention. William Scheppegrell, M.D., New Orleans.....707

Prevalence of hay-fever. Symptoms. Diagnosis. Etiology. The Ambrosias. Pollinosis. Influence of altitude. Predisposition. Cause of reaction. Reactions from the presence of animals. Failure of treatment. Prevention. Spring hay-fever. Organized campaigns for eradication of hay-fever-producing weeds.

Pollen Extracts and Vaccines in Hay-Fever. Solomon Strouse, M.D., and Ira Frank, M.D., Chicago.....712

Treatment of hay-fever still in the experimental stage. Etiologic rôle of pollen. Pollen extracts in the treatment of the disease. Hay-fever as a pollen protein sensitization. Treatment with bacterial vaccines and with pollen extract; experimental results.

The Treatment of Hay-Fever with Calcium Salt, with a Report of Twenty-Six Cases. Harold Wilson, M.D., Detroit.....715

Reason for testing this treatment. Dosage and administration. Results of the treatment. Report of cases.

The Spleen: Its Association with the Liver and Its Relation to Certain Conditions of the Blood. William J. Mayo, M.D., Rochester, Minn.....716

Changes in the spleen with liver and blood disorders. Function of the spleen defensive to the liver. Its probable attractive power to certain substances in the blood. Its lack of any important internal secretion. Its relation to digestion. Relation to the blood. Splenic enlargements. Splenic anemia.

Cauterization and Fulguration of Bladder Tumors. Howard A. Kelly, M.D., and William Neill, M.D., Baltimore 721

The beneficent change in the treatment of benign neoplasms of the bladder within the past decade. Exception to the general advantages of fulguration. Advantages of the open cystoscope.

Precordial Pains of Cardiovascular and Extracardiac Origin: Clinical Varieties, Etiology and Therapy. Selian Neuhof, M.D., New York.....723

Existing confusion in regard to the subject. Causes of precordial pain. Precordial pains of cardiovascular and extracardiac origin.

Certain Aspects of Infantile Paralysis, with a Description of a Method of Muscle Testing. Robert W. Lovett, M.D., and E. G. Martin, Ph.D., Boston 729

Report of a combined physiologic and orthopedic study of certain phenomena of infan-

(Continued on next page)

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See BACK COVER March 18 Issue.

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Bulletin

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See Page 3

CONTENTS AND DIGEST—Concluded

tile paralysis. Material used. Why a muscle test was desirable. Description of the test devised. Conclusions drawn from its use. Types of therapeutic exercises. Observations in private practice.

Action of Pituitary Extract. R. G. Hoskins, Ph.D., Chicago 733

An Unusual Case of Mesenteric Transplantation. Vicente Castro, M.D., San Jose, Costa Rica 734

Review of literature. Report of case of successful transplantation of mesentery.

Double Induced Pneumothorax. Edward von Adelung, M.D., Oakland, Calif. 735

Rationale of double pneumothorax. Report of case.

Congenital Anterior Curvature of the Spine: Report of Case. Samuel Kleinberg, M.D., New York 736

A Case of Spontaneous Rupture of the Malarial Spleen. W. E. Leighton, M.D., St. Louis, and Fred Moeller, M.D., Chicago 737

Report of Two Hay-Fever Cases Treated with the Pollen Extract. Margaret L. Noyes, M.D., Boston 738

Paper Clip in Bronchus Seventeen Years Removed by Superior Bronchoscopy. Edwin Beer, M.D., New York 739

Report of a Case of Tetanus, with Complications. J. S. Gaumer, M.D., Fairfield, Iowa 739

THERAPEUTICS

Backache 740

EDITORIALS

New Evidence Against Alcohol 742

Psychologic aspects of physiologic consequences of moderate drinking.

Instruments of Precision, and Progress in Science 743

Increased possibility of widening knowledge through the use of instruments.

Cerebral Pseudotumor and Torula Infection 743

Human infections with yeastlike organisms.

Respiratory Features of Cardiac and Cardiorenal Disease 744

Production of dyspnea in patients with acidosis and without acidosis.

The National Board of Medical Examiners 745

Creation of a voluntary board for thorough and practical licensing examinations.

Current Comment

A National Leprosarium 746

A bill which should be passed by the Senate.

Facts About the Behavior of Thymol in the Body 746

Destruction or fixation of more than half after absorption from alimentary tract.

The Interrelation Between Salivary and Gastric Digestion 747

Function of ptyalin in the later digestive processes.

MEDICAL NEWS

DISTRICT OF COLUMBIA: Protest Against the Wrapping of Bread—A New Refuse Disposal Project—Lengthening the Working Day for Government Employees 747

ILLINOIS: Personal—Physicians Endorse Water Works Plan. Chicago: Internists Meet—Personal—Eulogize Dr. Favill—Sanitary District Blamed for Typhoid 748

IOWA: Still Quarantine Against Illinois—Larger Hospital Needed—Personal—Child Welfare Research Station 748

KENTUCKY: Warning 748

MARYLAND: College Reopened—Imported Typhoid—Coroners for Baltimore City—New Home for Skin and Cancer Hospital—Personal 748

MICHIGAN: Communicable Diseases—Vital Statistics 749

MINNESOTA: New State Board Members—Leprosy—Personal—Dispensary Opened 749

NEW JERSEY: Motor Club Organized—Tuberculosis 749

NEW YORK: Wife Also Dies—To Do Honor to Elsner's Memory—Health Centers—Endowment of Art and Science Department of University—The Financial Budget and State Hospitals. New York City: Personal—Instruction in Contagious Diseases—Changes in Medical Faculty of Columbia University—Leprosy—New Medical Society Organized—Memorial to Blackwell Sisters—To Promote Industrial Hygiene—Semicentennial of New York Health Department 749

OHIO: Hospital for Youngstown—Personal. 750

PENNSYLVANIA: Measles Close Schools—Industrial Plants Defy Law Compelling Medical Attendance. Philadelphia: New Head for Blockley—Additions to Feebleminded Exhibit—Personal 750

TEXAS: Revised Quarantine Code—Personal—Health Survey—Hospital Needed at Houston—Students Must be Vaccinated 750

UTAH: New Officers—Personal—Advisory Medical Staff Planned 750

CANADA: Dissecting Laboratory for Sherbrooke, Quebec—Manitoba Physicians Meet—Hospital News—Personal 751

GENERAL: New England Roentgenologists Meet—Health Meet in Joplin—Hides Carry Anthrax—Deficiencies of the Child Supply to be Investigated—Tri-State Physicians Meet—Bequests and Donations 751

FOREIGN: For New Hospitals 751

WAR NOTES 751

PARIS LETTER 752

LONDON LETTER 753

BERLIN LETTER 754

ASSOCIATION NEWS 754

By Automobile to Detroit.

MARRIAGES 754

DEATHS 755

PROPAGANDA FOR REFORM 756

"Drug Reform."

CORRESPONDENCE 757

Strontium Salicylate versus Sodium Salicylate.
Strontium Salicylate versus Sodium Salicylate—A Reply.
First Aid in Accidental Wounds.

QUERIES AND MINOR NOTES 760

Valvular Endocarditis.
Insemination and Conception.
Articles on Medicine as a Career.
Paregoric Comes Under Harrison Law—Prescriptions for Narcotics May Not Be Telephoned.

MEDICAL EDUCATION AND STATE BOARDS OF REGISTRATION

Coming Examinations—South Carolina June Report—Ohio October Reciprocity Report 761

BOOK NOTICES 761

MISCELLANY

Constitution and By-Laws of the National Board of Medical Examiners for the United States—Narcotic Drugs 762

MEDICOLEGAL

Provisions of Medical Practice Act Held Valid—Liability for Wrong Diagnosis and Treatment—Power of Foreman to Contract and Receive Notice as to Needed Medical Aid—Validity of Joint Indictment for Practicing Medicine Without a Certificate 764

SOCIETY PROCEEDINGS 765

Coming Meetings.
Medical Society of the County of New York.
Association of American Medical Colleges.

CURRENT MEDICAL LITERATURE

American Medical Journals

Nonparasitic Chyluria—Alcoholic Cirrhosis of Liver—Blood and Blood Vessels in Hemophilia 769

Eventration of Diaphragm—Gaucher's Disease in an Infant—Agglutination in Pertussis—Typhoid Treated by Injections of Polyvalent Sensitized Typhoid Vaccine Sediment—Vasomotor Disturbances of Upper Air Passages 770

Physiology of Reproduction in Domestic Fowl—Vasoconstrictor Center During Development of Shock—Physiology of Parathyroid Glands 771

Studies in Nicotin Tolerance—Hexamethylenamin as Urate Solvent and Diuretic—Gonococcus Complement Fixation—Localization of Function in Canine Cerebellum—Value of Adductor Responses of Leg 772

Leprosy Treated with Chaulmoogra Oil—Treatment of "Grippe" 773

Foreign Medical Journals

Treatment of Gunshot Wounds of Knee Joint 773

Gunshot Wounds of Chest—Surgical Treatment of Gunshot Wounds of Chest—Simpson Light in Treatment of Venereal Lesions—Fatal Case of Anthrax—Citrated Whole Milk Method in Feeding Infants—Undiluted Citrated Milk in Feeding of Infants 774

Improved Technic for Preliminaries to Serodiagnosis—Sterilization of Wounds and Immediate Closing—Brown-Séquard's Epilepsy—Iodin in Treatment of Major Infections 775

Squill as Rat Poison—Complications of Paratyphoid—To Determine the Reserve Force of the Heart—Simple Pruritus 776

Cancer of the Gallbladder—Connection of Syphilis with Vascular Disease—Treatment of Kidney Disease—Is Sanitation of Prostitution Impossible? 777

Action of Animal Charcoal on Gastric Digestion—Cholera Quarantine Requires Two Weeks—Serologic Diagnosis in Psychology—Alimentary Glykemia in Infants—Treatment of Rachitis—Danger of Poisoning from a Bullet in the Tissues 778

Cystic Mole—Bacteriemia in Puerperal Febrile States—Forceps Extraction—Motor Response of Stomach to Cold and Warm Drinks—Physical Measures in Treatment of Whooping Cough—Pituitary Treatment in Diabetes Insipidus—Ligation of Vein in Pyemia Consecutive to Wounds of the Extremities—Abortive Treatment of Syphilis 779

Treatment of Diarrhea—Aphonia with Valvular Defect—Leishmaniosis in Children—Viability of the Prematurely Born—Intravenous Salicylic Medication—Induced Pneumothorax 780

BOOSTS—CLIPPINGS FROM LAY EXCHANGES—TONICS AND SEDATIVES—BOOKS RECEIVED—THE PUBLIC SERVICE ..... Adv. Page 20

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STATE HEALTH ORGANIZATION *

CHARLES V. CHAPIN, M.D.

PROVIDENCE, R. I.

The purpose of this paper is to discuss the general principles which are likely to be most useful in planning legislation, or mapping the sphere of the state's share in the preservation of the public health.

The first essential for efficient state health organization is a strong executive. A board, or committee, is almost never successful in executive work. What is needed is one person clothed with full executive power. It makes no difference whether he is called commissioner, health officer or director. He alone should appoint subordinates, control the finances and define policies. His term of service should be at the pleasure of the appointing power. His salary should be adequate. He should devote his entire time to the service. He should be trained in public health work.

The difficulty is to get such a man. The greatest hindrance is politics. How to eliminate politics is the great problem. In some states at present it seems to be hopeless. The citizens seem to be perfectly willing that their executives should work for the party instead of the state. Most persons agree, however, that the degree of political prostitution depends, to some extent, on the form of organization.

One plan to avoid political entanglements, which has been tried in several states, is to give the medical societies a share in the management of the health department. It is dangerous and unwise to give to nonrepresentative bodies a share in the government. Moreover, medical men as a body are not skilled in preventive medicine. Only great benefits, not to be otherwise secured, would warrant such a delegation of authority. It must be remembered that medical politics and medical log rolling are at times as pernicious as any other form of partisanship. There are four states in which the state medical society, or societies, control the department, or a majority of the board, and one in which the society elects a minority of the board. Most excellent work has been done in some of these states, but equally good work has been done under other forms of organization in states in which other conditions are no more favorable.

Most reformers think that much can be accomplished by fixing responsibility. One man, they say, should make appointments. Hence the tendency is to provide that the governor shall appoint the heads of all departments. At present the governor appoints the executive of the state health department in less than a third of the states. In a number of these the department is overturned every time there is a new governor, and the public funds are wasted by an inefficient department. On the other hand, in many states which have attained the highest rank in sanitary affairs, and in many in which the executive has to his credit long years of efficient service, he obtains his position in another way.

In every state in the Union it has, for one reason or another, been thought desirable to have a board of health, and in all but one it is prescribed by law. The older plan for the selection of a state health officer is by election by this board. This prevails, practically, in thirty states. This seems to me to be at present by far the best way to secure and keep an efficient executive, provided the board is constituted in such a way that its membership is likely to change slowly, and provided it has no other executive power. It will probably be objected that it is illogical to give the board of health this one executive duty of such very great importance and to grant it no other. So it is; but some of the most useful governmental institutions are illogical and the result of compromise. A continuous board seems, in the light of experience, to be less likely to inject politics into its selection than is the governor, and it is still less likely to do so if it has no other direct executive authority. Moreover, if the board has no direct authority in the selection of employees and in the expenditure of funds, the governor is less likely to use appointments on the board to reward political workers who are looking for a place with something in it. Of course the selection of the state health officer by the board will not certainly save the office from politics, but it will render it far less likely to become a part of the spoils system. Another safeguard is to provide that the board shall not elect one of its own members as executive officer. This not only tends to eliminate politics, but it also prevents the development of jealousies and friction within the board.

The executive officer should be skilled in sanitary science and have had administrative experience, and it is perhaps well enough so to provide by statute; but this of itself will not secure a good choice. It is important that the selection should not be confined to residents of the state as it is now in some states by statute and, in one at least, by the constitution. Generally it is unwise to prescribe qualifications, because these, if specific, are rarely helpful, and conditions may arise under which they hamper.

After the selection of the executive comes the important matter of rule making. Here the question of constitutionality arises, and lawyers and courts are not in entire agreement. Decisions vary in different states, and local conditions must be considered before framing

* Read at the Joint Session of the Council on Health and Public Instruction of the American Medical Association, and the Federation of State Medical Boards, Chicago, Feb. 8, 1916; abstract of discussion, Society Proceedings, THE JOURNAL A. M. A., Feb. 26, 1916, p. 685.

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any legislation. While in some states the courts have sustained a very broad grant of legislative power to the state department of health, in others the authority to do this has been denied. It is generally admitted that it is unwise, if not unconstitutional, to confer on a single commissioner legislative authority, or even much rule making power. This, then is an important reason for the establishment of a board of health, or, as it is called in its newer form, a public health council. Many of our leading health officials believe that rule making and advising should be its sole functions. I think that no harm and much good will come from having it choose the health commissioner. That such a board may be of great value in advising the commissioner and by supporting him throughout the state is shown by experience, but this will depend on the character of the board and can scarcely be provided for by statute.

Such a board may well consist of seven, or six if the commissioner is to be a member, one to be appointed each year. The exact number is not important, but the complexion of the board should not be easily changed. It does not seem to be important whether the commissioner is, or is not, a member. Ex officio members are not usually of much value. It does not seem wise to prescribe qualifications of members. They should be men of character, interested in public health, but not experts. If they are experts they are likely to interfere with the real executive. To appoint an engineer, or an attorney, for the purpose of getting advice free, for which the state ought to pay, is reprehensible. It is unusual for the members to receive compensation, and this seems the wiser plan.

While there is some doubt about the wisdom, and in some states about the constitutionality, of granting to the state board of health practically unlimited power in sanitary legislation, practically all health officials are agreed that there is a large body of administrative rules relating to notification, isolation, disinfection, milk, food, water, sewerage and the like, which it is absurd to expect that the legislature is competent to enact properly as law. The legislature has neither the time nor the knowledge, and unless it accepts, without amendment, a code drawn up by experts, the results are likely to be crude and unsatisfactory. The best way is to give to some small body, like the state board of health, this rule-making power, and this board will, in its deliberations, be guided by the expert advice of its executive officer. It is only by means of rules that sufficient flexibility of legislation can be obtained. Delays in the proceedings of the legislature are often numerous and extended, and statute law cannot be relied on to keep legislation abreast of scientific progress.

Whether the board is to be given full legislative authority by some such phrase as "said board is authorized to adopt a code for the preservation of health," or whether certain subjects, such as those previously mentioned, are to be specified, concerning which it may make rules, depends on the constitutional provisions and the court decisions of the state in which the matter is under consideration. This rule-making power is regarded as one of the most important functions of the department of health.

If the decision is that broad legislative power cannot be granted to the department, the greatest care should be taken in drawing up the statute which is to specify the subjects on which the board may make administrative rules. As many subjects as possible should be included, and the act should be so worded as to give to the board the greatest possible latitude under the constitution as interpreted by the courts.

The principal functions of the department of health are indicated by the divisions, or bureaus, which are found in the department in the larger states. Sometimes these divisions are provided for in the organic law, especially in the newer enactments. More often they have developed naturally with the gradual growth of the department. It is perhaps well enough to provide for them in the organic law, but if this is done, provision should also be made that the executive of the department may modify, rearrange, add to or subtract from them. It is most unwise to provide rigidly for such matters, for, within a very brief time, functions which now receive little attention may become of the greatest importance. Who knows how soon a special bureau will be needed for cancer, for the venereal diseases, or for circulatory and renal diseases? Who knows how soon local laboratories will be so generally established that the diagnostic work of the state laboratory may safely be neglected?

FUNCTIONS OF THE HEALTH DEPARTMENT

1. The first duty of the department is to secure the complete registration of vital statistics. It is no mere academic expression to say that this is the foundation of all public health work. Vital statistics are of the utmost practical importance. How is it possible to know how much attention to give to tuberculosis, how much to typhoid fever, how much to the distribution of antitoxin for diphtheria, unless it is known how prevalent these diseases are? How can we be certain what towns have a safe water supply unless we know how many people die of typhoid fever? Statistics alone can show whether the most attention should be devoted to the city water supply, or the country privy. What is the infant death rate? Is the case fatality of diphtheria too high? Is tuberculosis decreasing as fast as it should? These vital questions, vital in every sense of the word, can be answered only by an accurate registration of births and deaths. Only twenty-five states are in the registration area for deaths, and ten in the provisional area for births — a poor showing, but indicating great recent progress.

2. The control of communicable diseases is still the chief function of the health department. Under present conditions little will be done except in the largest cities unless the state department takes the initiative. All but three, or four, of the smallest states need an epidemiologist, a real epidemiologist. The large majority of the states need more than this. They need a well organized, well financed division of communicable diseases. Few states are thus provided. Most of them are content to rush out their executive officer to hurry calls for smallpox outbreaks. Little systematic routine work is done. Perhaps a dozen states are trying properly to keep the run of communicable diseases, and most of them are not too successful. The first requisite for control is notification. Notification is much better in the cities. It is the duty of the state officials to make it equally good all over the state.

The Public Health Service in 1914 attempted to utilize reports of communicable diseases from only thirty states. An examination of the case fatality shows that in less than a dozen is it likely that diphtheria is reported with sufficient accuracy to make

returns of any use for either statistical or administrative purposes. The reports of typhoid fever and tuberculosis are far less satisfactory than for diphtheria. The number of communicable diseases is so large and the amount of work to be done is so great that some have thought it best to have separate and coordinate divisions in the health department for certain diseases, as tuberculosis or hookworm infection. The trouble with this arrangement is that the disease thus honored receives more than its due attention. The communicable disease work ought to be well balanced, and at first thought it would seem best to have one man in charge of all communicable diseases. If this makes the bureau too unwieldy, and separate divisions seem to be necessary, the executive should see that they are properly balanced. This is no easy task, as the legislature is quite likely to decide matters under pressure from enthusiasts who can see nothing but tuberculosis, or trachoma, or hookworm or venereal disease.

The diagnostic laboratory is at present an important part of the state health department. It, too, may well be a subordinate portion of the epidemiologic division. If coordinate with the latter, the executive has another task in seeing that the two really are coordinate and work together effectively. The time ought to come when the state laboratory will be able to abandon its diagnostic work to local laboratories scattered over the state, and will be free to devote itself to the administrative and research problems of the central department.

It is only by the proper development of epidemiologic work that the enormous value of antitoxins and vaccines can be secured to the people of the state. These must be distributed free and freely, and must at times be administered. Whether it would be better for the free distribution to be by the state or by the local governments is perhaps a local question. In some instances the state appears to do it with advantage. In others, the towns or counties seem to do their share well. If it is left to the local government, the state department should see that there is a good law and that the local governments do their duty.

3. Child hygiene is a subject which has been much neglected. In most of the larger Northern cities it has been shown that infant mortality can be markedly reduced by proper efforts. Infant mortality has been excessive, not only in the large cities, but fully as much so in the smaller urban communities, and conditions in villages are often equally as bad. Over large sections of the country, in the absence of statistics, it is not even known what the infant mortality is. That there is scarcely a place where it is not possible to reduce it greatly is improbable. The saving of babies' lives is one of the most effective and certain lines of public health work. It gives quick returns. The death rate is reduced the first year. While the actual work of baby saving is essentially local, the state can set the wheels in motion, as has recently been well illustrated in New York. No state can longer afford to neglect this field.

The medical inspection of schools does not yield such brilliant results. Not many lives are directly and immediately saved. The improvement of countless minor evils, even if they were such as to cause further trouble, is not spectacular. Both city and the state health departments have allowed school officials to take the initiative in school inspection. This is unfortunate, as school inspection is essentially a health function of the state. It is very desirable that all the health work of a city, or state, be centered in one department. School inspection is medical work, and the medical work of the state and its municipalities is certain to increase. It will be unfortunate to have it scattered among different departments. The health department should be the controlling factor in all state medical work.

4. The supervision of water and sewerage is a most important function of the state. This requires the services of one or more engineers, chemists and bacteriologists. Other matters, such as schoolhouse and institution construction, offensive trades and other nuisances, and land drainage often require the services of this division, though the promotion of the purity of water supplies is its most important duty. Some of the smaller states find an engineer with chemical and bacteriologic training sufficient to do most of the needed work, but all the larger states require a well organized division, sometimes with many employees. At present about half of the state health departments have no engineer in their employ.

5. Public health education is rightly considered of very great importance. It should occupy a good part of the attention of every department. Almost all health officials imagine that they are particularly qualified for carrying on educational work. While a great many health officials have the knack of writing catchy paragraphs and of interesting hearers at a lecture, few are really well fitted to have charge of the educational division. Such a person should first of all have sound judgment. It is necessary to select the wheat from the chaff. It is impossible to teach everybody everything. Attention should be focused on what is most important. Essentials should be adhered to rather than every new slogan repeated that is sounded by some enthusiast. The choice of method, too, is as important as the choice of subject. Novelty is not always to be sought. What is necessary is to make knowledge sink in. To catch the ear or the eye of the populace for a moment does not always do this. What the department needs is a teacher, not an advertiser.

6. In sixteen states the health department is charged with the administration of the pure food laws, though in some of these practically nothing is done by the department. The prevention of adulteration is the chief purpose of most of these laws, and this phase of the subject embraces most of the food work. The prevention of adulteration, except in a few instances, is an economic, not a health problem. It is true that the sanitary handling of food does, in some directions, and to some extent, affect the public health; and practically all of the state departments of health engaged in the prevention of adulteration do attempt to secure greater cleanliness in the handling of foods, though how effective this is, at times, is open to question. There is a difference of opinion as to whether or not there should be a food division in the health department. As this is a matter which no more affects health than a thousand and one other things, and as it diverts energy and money from purely health work, and as it is likely to arouse opposition to the health department on the part of powerful interests, it would seem better on the whole not to undertake this line of effort. Still, as some departments have long and successfully carried on food work without detriment, it is perhaps safe to allow the decision to depend on local

conditions. The sanitary control of milk is of much more importance, but here again there is difference of opinion as to what should be done, or how much should be done. The attempt of the state really to control the entire milk supply has never been very successful. Perhaps the best work for the state is to educate, to secure legislation to permit of efficient local control, and to assist local officials, especially those in the smaller communities.

7. In the last analysis, the success of most public health measures depends on the man on the spot. In other words, there must be local health officials to carry out the details of many of the most important measures of disease prevention. This is by far the weakest point in the whole public health system. The larger cities are doing fairly well. Most of the small towns are not. Most of the rural portion of the country is doing nothing. Health administration cannot be left to work out its own salvation. Some outside agency must at least point out the way. This is properly the business of the state. It is the duty of the state health department to strive to make health work efficient all over the state.

All sorts of schemes have been suggested, and some of them have been put in effect. None have been in successful operation long enough to show that an ideal has been found. A number of states last winter had carefully prepared bills to improve local health administration, but they did not receive favor at the hands of the legislators. Conditions vary a good deal, as to prevailing diseases, wealth, density of population, political customs and ideals. What may prove to be the best plan in Massachusetts probably would not be the best in California or Mississippi. As regards methods of local health work we are still in the experimental stage.

Where the township form of government is well developed, township health officers have very generally been provided for by law. In many states it would be difficult to get away from the township idea. The attempt to do so has been unsuccessful in some states. Is it not the wisest course, in such states, to accept frankly the township health officer? Of course in most townships there is not enough work for a full time officer. The part time health officer cannot be left to himself. He must be under continuous supervision by the state, thus becoming practically a deputy under a district supervisor. This is the Massachusetts plan, and seems to me to be the best solution of the problem for the present in a number of states. The combination of townships, or of towns, with a full time health officer, which has been successfully accomplished in a few instances, ought to be brought about in many more.

In some parts of the country, as in the South and some parts of the middle West, the county is thought to be the proper unit for efficient health work. In most instances a full time health officer is necessary for successful county work, and many who are most conversant with the conditions believe that they warrant the employment of a full time man. In some counties, even with a full time health officer, deputies also might be needed.

In other parts of the country, where the population is not so dense and where for other reasons not so much work per square mile needs to be done, artificial districts, consisting of combinations of counties, are suggested. In these districts, and indeed in some of the large counties found in the Mountain and Coast states, deputies are necessary, though on account of the great area rather than because of the number of people to be cared for.

The local health officers and deputy health officers who do the bulk of the routine work must be good men. The manner of selecting them is of great importance. Most state officials believe that they ought to be appointed by the state. This is the practice in only a very few states. There are decided objections to the plan, the most important of which is the danger, almost a certainty under present condition of morals, of building up a political machine. Whatever our theories may be about this, there is great popular as well as political objection. Popular regard for home rule makes it an impossible measure, probably, in most states. The bills presented last year in Indiana, Kansas, Michigan and Ohio, I believe, all provided for local election. All of these bills did, however, provide for some sort of control of qualifications. This would seem to be a legitimate, useful and acceptable means of state control.

It is also recognized that even good men will not work and should not be asked to work without adequate compensation. In Florida and in a good part of Pennsylvania the state pays, as well as appoints, the local health officer. It seems to be impracticable, and I believe it to be unwise, to do this in most states. Instead of this the compensation which is to be paid by the local governments may be fixed by the state. This attempt, too, has not been very successful; but it gives better promise than the plan of having the state carry on all local administrative work at its own cost.

Whether there are county health officers, township health officers, or district and deputy health officers, in order to have an efficient local administration there must be an effective supervision by the state department of health. All health officers need, and most desire, help from without. The state department of health should be prepared to give this help. It should also have authority to compel action. Even with a full time health officer in every county, supervision by the state would be necessary. Even without authority, and without any reorganization of local health institutions, in probably nearly every state, great improvement could be brought about by the continued efforts of even one skilled administrator who should devote his time to the stimulation of local health officers and of the communities in which they work. To do this requires no novel legislation and no radical change in policy. One such unofficial advisor may be appointed this year and another next year, or the year after. It is a promising field open now to every state department of health.

Most health officers believe it is a great help if the state has some means of coercion. Many communities can be persuaded to do right; others cannot. Some people will listen to reason only when they know that they must. It is wise to give executive power to the state department of health. If it is known that the state can step in and abate nuisances and control communicable diseases, it may compel local officials to act. Often local officials are glad of this pressure, which to them is a help. The pressure is greater, if, when the state acts, the cost becomes a charge on the local government. If this authority is exercised with discretion, it will be wholly for good. Believing that it will be so exercised, legislators have not been markedly

adverse to conferring such power on the state department of health, and it has been done in almost half of the states.

There is one other point which ought to be emphasized, and that is the desirability of having as much as possible of the health work of the state centered in the health department. To have a number of commissions and boards, as well as the state university, working independently in the field of preventive medicine is bad. It does not make for economy or efficiency, and it prevents solidarity in education and administration. The public is annoyed and rendered skeptical by a multiplicity of inspections, rules and precepts. It is highly desirable to utilize the scientific knowledge of the university and infuse its scientific spirit into public health work; but I am old fashioned enough to believe that it is not desirable for the university to take on administrative functions, and it is not desirable for it to engage in any kind of public health work except under the direction of the health department.

SOME ESSENTIALS TO THE DEVELOPMENT OF EFFICIENT HEALTH ORGANIZATION *

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With the beginning of the present public health movement several years ago, comparative analyses were made by me of the state and territorial laws relating to health organization. More recently, on request of their respective authorities, investigations of the health organizations of ten states and certain cities have been made by officers of the Public Health Service. In consequence of these studies, and the relations with state and local authorities in health work, a clearer idea has been gained, not only of the immediate needs of these agencies, but also of certain principles that should be utilized in their further development.

Certain of these needs are fundamental, and are like some of those with which the federal health agency has to contend. Among the needs referred to, in the order of their importance, may be mentioned: (1) awakened interest and support on the part of the public; (2) adequate personnel and appropriations; (3) cooperation of health agencies with each other.

These fundamentals are emphasized here because, regardless of character of organization, no health agency can be efficient without one or more of them, and because their absence has undoubtedly been largely responsible for the lack of growth of health organization and health work heretofore.

ACTIVE INTEREST OF THE PUBLIC IN ITS HEALTH AGENCIES

Lack of public interest in health matters in the past may be attributed to numerous causes. In an early day the need of common defense against other dangers took precedence over the defense against sickness. The country was sparsely settled, and there was no rapid means of communication. In consequence, such health agencies as existed were local, and established primarily to meet emergencies.

In a later day, economic advantage was evaluated above health possession. As a result, growth of health organization was stimulated for the most part only by the danger of epidemics. Following the epidemics of the thirties, fifties, seventies and nineties, many new laws were placed on our statute books; but between epidemics, by reason of our political system, little or no interest was taken by the public in health matters. The enforcement of sanitary laws was accordingly left largely to political appointees. As a result, with few exceptions, health boards did not have the full confidence or support of the public generally.

When in recent years interest in health matters did begin to manifest itself (and this was only one manifestation of a general desire on the part of the public to insure to individuals their social rights in greater degree), it was oftentimes through private agencies newly organized for specific purposes that the work was carried on, and not through already organized health agencies. One of the striking signs of the times is the increasingly large number of these associations and societies aiming at a common object, few of them properly correlated with each other or with official organizations. In consequence, there has undoubtedly been duplication of effort as well as lack of uniformity, and existing health authorities have not been supported or relied on as they should have been in furthering public health organization and public health work. In part at least this had had a deterrent effect on growth of these health agencies.

In those countries in which local health work is well advanced, as in England and Germany, dependence has been placed largely on duly constituted agencies, and respect for the enforcement of law encouraged. If these agencies in our country had been given equal public support to enable them to discharge their full duty, many of the additional functions and facilities would have been provided long ago. Too often with us reorganization of a health department has simply meant some unessential revision in the laws in order that a change of personnel might follow a change of political parties in such manner as not to offend the sensibilities of the public.

ADEQUATE APPROPRIATIONS AND PERSONNEL

The absolute essential for the conduct of public health work, however, is adequate appropriations. An examination of the laws will show in many instances that ample authority has already been provided; in fact, one is led to suspect sometimes that it is ample simply because at the time the law was enacted it was known that funds for its enforcement would not also be provided. Some very good state health laws might be cited as impossible of enforcement purely by reason of lack of adequate appropriations.

Fox states that not less than 2 per cent. of the total revenues of a state should be set aside for health work, and has made the same estimate in the case of counties. Only one state in the Union approximates this arbitrary standard. Had they all done so, the most powerful factor in the solution of the problem of public health organization would have been provided. This amount of appropriation should be attained, however, by gradual annual increases, as assurance is had that the funds are being well spent and that adequate results in disease prevention are being secured.

The percentage estimated above for states would not apply in the case of cities, as their expenditures are based on somewhat different requirements; but

* Read at the joint session of the Council on Health and Public Instruction of the American Medical Association and the Federation of State Medical Boards, Chicago, Feb. 8, 1916; abstract of discussion, Society Proceedings, THE JOURNAL A. M. A., Feb. 26, 1916, p. 685.

whatever the requirements, funds should be provided to meet them.

In determining these requirements and the amount to be used for each object, it is necessary to have in mind the amount of disease to be overcome, the economic loss occasioned thereby, and the practicability of prevention. Since in health work, increases of appropriations will depend largely on recognition of the value of these results, an exact system of accounting should be adopted, by means of which, so far as possible, tangible results may be expressed mathematically.

In order that appropriations may be wisely used, an adequate personnel is also essential. In my judgment, properly trained, full time health officers are the sine qua non of present day health development. This applies especially to political units in rural communities. As said elsewhere, in this respect our progress is unsatisfactory as compared with that of England, for instance, where the majority of towns or counties have medical officers of health, who hold diplomas of public health and possess a knowledge of sanitary matters not required of the practicing physician.

ENCOURAGEMENT OF LOCAL AUTONOMY

By reason of priority of establishment of local health boards in the United States and the large measure of independence which they enjoy, these should be the best developed agencies we have for the prevention of disease. As previously stated, the policy of both the federal and state governments has been to encourage local autonomy in public health matters. The first federal sanitary law, enacted May 27, 1796, provided for cooperation of revenue officers with states and municipalities in their measures of prevention. Likewise, in Massachusetts, for instance, in 1797, the first state law was enacted for the establishment of local boards of health, empowering them to "make regulations . . . for the public health and safety respecting nuisances, sources of filth, and causes of sickness." This phraseology was later copied by many states before acts were adopted by them providing for centralized state health agencies.

This policy of local autonomy in public health matters continues, and should continue so far as consistent with public safety, having in mind, however, the fact that there are situations affecting more than one community that each community alone cannot handle. Such situations should be met by laws having statewide application in conformity with the principle upheld by judicial decisions that "it is primarily necessary that there should be one central authority (within a state) clothed with the power of affording equal protection to all." [1]

NECESSITY OF COOPERATION OF HEALTH AGENCIES

These local units should be correlated, however, and brought into cooperation with the state and national agencies; for under our form of government, health administration must of necessity be of a threefold character — federal, state and local — and the responsibilities and duties of each must be well defined and respected.

As is well known, the jurisdiction of the federal government in public health matters extends only over foreign intercourse, interstate intercourse, federal territory and federal administrative affairs. Under the constitution, it cannot usurp the functions of the states. In fact, in accordance with its long established policy of cooperating with state and municipal authorities, the federal government has relied largely on these authorities for the prevention of the spread of disease from one state or territory to another.

Under the act of Feb. 15, 1893, the secretary of the treasury is authorized to cooperate with state and local authorities. He may also issue regulations for the prevention of the spread of contagious and infectious diseases from one state to another when the regulations of the states are inadequate. These federal regulations, however, may be enforced by state and local authorities, but should they fail or refuse to do so, the president may adopt such measures as in his judgment shall be necessary.

Having reserved to themselves the police powers in respect to sanitation within their borders, the states have likewise the right, if they choose to exercise it, to take cognizance of matters affecting more than one community. Many of these powers in local affairs have been delegated, however, to local communities, and in consequence, the states affected have not that supervision over local health administration which is desirable and necessary to bring about uniformity and efficiency in the interest of the state as a whole.

In order to insure the greatest good to the greatest number and to meet changed conditions, I believe it will be necessary for all states to exercise the right of central supervision in greater degree over local health matters, notwithstanding some of their powers in this respect have apparently been previously relinquished to local authorities, for the principle has been definitely established by interpretation of law that "the state is still the sovereign, and may extend, limit, or revoke these powers (delegated) at will." [1] In other words, as in the case of the federal government, state governments should be in position when necessary not only to prescribe measures in the interest of more than one community, but to enforce them if the local authorities fail or refuse to do so. This principle is now embodied in the laws of at least twenty states, although the means to its enforcement may not likewise have been provided.

In addition to the regulatory powers referred to above, there should of course be no question as to the right of both federal and state governments to engage in public health investigations and dissemination of information thus acquired on the principle that the protection of health is, after all, largely a question of education.

DEFINITENESS OF THE POWERS AND DUTIES OF HEALTH ORGANIZATIONS

In all jurisdictions, the powers and duties of health organizations should be clearly defined and relate strictly to the protection of the public health. Furthermore, they should be distinct organizations and not combined with those having to do with charities and corrections and other welfare functions which are just as definite as health functions, but sometimes confused with them. The business of health organizations is primarily the reduction of morbidity and mortality. They should accordingly be looked to to carry out measures devised for this purpose, but should not have imposed on them all sorts of functions having only a most indirect health bearing.

The regulation of the practice of medicine and other vocations, for instance, should not ordinarily devolve

1. State Board of Health v. City of Greenville, Ohio, Sup. Ct., April, 1912.

on state health organizations. In some states this has undoubtedly interfered with the proper development of health work. In Illinois, Grubbs has estimated that in the past 75 per cent. of the time of the secretary of the state board of health, and 80 per cent. of the time of the board, has been occupied in enforcing the medical practice act.[2] In West Virginia, also, in the past, this work has largely concerned the state board of health almost to the exclusion of other duties.[3]

Purely public health activities, such as the control of tuberculosis, school hygiene, industrial hygiene and sanitation of milk supplies, on the other hand, should devolve on the duly constituted health authorities and not be scattered promiscuously through various departments of government. In the recent past, the tendency has been to impose these duties on other than health agencies. In the state of Washington, for instance, hotel inspection for sanitary purposes is carried on independently of the state health organization. In Minnesota, this applies to the control of the sanitation of places of employment. In West Virginia, in 1914 this applied also to inspections of factories, hotels and schools, investigations of water supplies, and even to the enforcement of compulsory vaccination. Not much could be expected of the commissioner of health in the control of smallpox when the enforcement of this last most important function devolved under law on the county courts.

Not only should powers and duties be fixed by law, but it would be well if there were an interdepartmental or interdivisional committee with absolute authority to prevent assumption of the functions of one department, bureau or division by another and to prevent duplication. Theoretically, this power may be exercised by the official family of the chief executive in most governments, but practically it is often not done; and a mere segregation of functions by legal enactment will not accomplish the purpose, for they will not stay segregated by reason of the general character of organic statutes and the well meaning if misdirected ambitions of executive officials.

A SINGLE EXECUTIVE

It will be seen from the foregoing that if men and money are provided for health work as a result of an awakened public opinion, abundant opportunity will be presented to obtain results, and the development of a suitable public health organization will be stimulated. This evolution should begin with whatever is good of the organization already established. If it is incomplete, functions and funds should be provided to remedy the defect.

Public health organization in the United States being as yet in a developmental stage, it is possibly too soon to prescribe model laws for all states and towns. There is perhaps advantage in having different forms of organizations working side by side, the one being a control over the other as to efficiency.

Whenever reorganization is contemplated, however, I believe it would be well to vest in a single executive sole responsibility for all administrative matters, and hold him liable for inefficiency. This principle is followed in selecting the president of the republic, the governor of a state or the general of an army, and is a recognition of the fact that what is everybody's business is nobody's business.

2. Grubbs, S. B.: Public Health Administration in Illinois, Pub. Health Rep., May 21, 1915, p. 1479.
3. Clark, Taliaferro: Public Health Administration in West Virginia, Pub. Health Rep., Jan. 22, 1915, p. 207.

While some state and local boards of health have undoubtedly demonstrated their efficiency, it must be admitted that they are more or less unwieldy, and there is a division of responsibility in executive matters particularly which should not exist. The improvement of sanitation and the prevention of disease require prompt action, and the authority to enforce necessary measures should be lodged with a competent official who can alone be held responsible.

Whether the title of the executive be "commissioner," "state health officer," "secretary," "superintendent of health," or "director general" is a secondary consideration; the essential is to lodge in him authority to take the initiative necessary to carry on preventive work at all times.

Boards of health with from ten to fifteen members are examples of undesirable diffusion of executive authority. By reason of their methods of work, they are on duty only at stated intervals. In all recent public health legislation, such as that enacted in Maryland, Massachusetts, New York and West Virginia, a state commissioner or health officer has been provided for, and in the majority of cases he is required to give his undivided time to his duties.

I would not discourage the providing of boards or commissions, but would confine their functions to the handling of quasilegislative and quasijudicial matters, and to acting as advisers to their respective health executives. In France, Germany and the United States such councils are available to the national health executives. In Massachusetts, New York, Pennsylvania and West Virginia, like councils are specifically provided for by law, and in some other states, the duties of boards of health are in fact restricted to these lines.

It goes without saying that membership of such boards should be selected wholly with reference to public spirit, knowledge of health matters, and willingness to serve at nominal compensation while in the actual discharge of duties. With such qualifications, they may be relied on for the performance of quasilegislative and judicial and advisory duties of a high order.

CONDUCTING OF DUTIES OF HEALTH ORGANIZATIONS THROUGH APPROPRIATE DIVISIONS

Executive health matters may be best conducted through a central office having appropriate divisions. The number of these divisions will necessarily depend on the size of organization and functions as fixed by law.

While there may be a difference of opinion as to whether a particular line of work, for instance, the inspection of plumbing, should be committed to health departments, there can be no doubt that all direct functions for the protection of health should be so committed, and grouped in such manner as will insure their receiving full attention.

As examples of the embodiment of this principle in recent legislation, the laws of Maryland, Massachusetts, New York and West Virginia may be cited. In Maryland, there is authority for five bureaus, namely, those of communicable diseases, bacteriology, chemistry, sanitary engineering and vital statistics. In the Massachusetts law the creation of divisions is left to the department of health, and in accordance with this authority seven divisions have been instituted, namely, those of administration, communicable diseases, hygiene, foods and drugs, sanitary engineering, water

April, 1912.

vocations, for instance, should not ordinarily devolve

and sewage laboratory, antitoxin and Wassermann laboratories. In New York, nine divisions are specifically mentioned in the law, namely, those of administration, sanitary engineering, laboratories and research, communicable diseases, vital statistics, publicity and education, child hygiene, public health nursing and tuberculosis. In all these states the classifications of functions, so far as made, are practically the same.

Such uniformity in the classification of work shows the importance and definiteness of this work, and emphasizes the necessity for the employment of full time division officers competent to develop it and to be responsible to their superior for results.

NECESSITY OF AN ADEQUATE FIELD FORCE

In order to carry on field work, a regularly organized personnel is also necessary. For the most part, this force, whether federal, state or local, should be mobile in character. Such mobility has been one of the largest factors contributing to the efficiency of the federal Public Health Service. In my judgment, it is a principle adaptable also for state and to a lesser degree local health agencies. It increases the efficiency of individual officers, renders them available to meet emergencies in different localities, and indirectly makes for true promotion.

In order to stimulate development of health agencies and facilitate cooperation, I have felt that it would be desirable for local health officers in specified field positions to act also in the capacity of federal and state officers and be clothed with both federal and state authority. Since full time local health officers are the most important need of the present, it might be well for the time being for the state and federal governments to join with local authorities in providing these officers in local jurisdictions, provided a due proportion of the expense was borne by those jurisdictions; and there is precedent for this apparently new idea, since it has been recently embodied in law to stimulate agriculture. In other words, authority has been granted for the appointment by the federal government of full time farm demonstrators, the county to pay one half. A like provision in respect to full time health officers would have far-reaching effects. Substantially it is now in operation in England, since under certain conditions a portion of the compensation of local health officers is paid by the crown. Largely by reason of this provision, local health administration in that country is regarded as far advanced.

In order that the several states may provide adequate field forces, a number of plans, some of them already in operation, suggest themselves: 1. Depend on county and municipal health officers. 2. Divide the state into districts and appoint health officers to have charge of them under the state health agency, and to cooperate with local health authorities. 3. Provide for districts of a single county or by two or more counties joining together, each district to be in charge of a full time health officer, clothed with full authority of the state and county, be appointed by the county on recommendation of the state health agency as to qualifications, and be amenable to this agency for efficiency.

The first plan is now in operation in many states, the county or township being the unit. As if the county were not a small enough unit, some laws specifically provide that its health provisions shall not supersede or in any way interfere with those municipal health boards within its borders. It would seem that the county and the municipalities within its jurisdiction should pool their interests, and be obliged to do so where this will enable them to join in securing the services of a full time health officer.

The second plan referred to above is now in operation in Maryland, Massachusetts, New York and Pennsylvania. Under its provisions the state is divided into sanitary districts, and a representative of the state board of health has immediate charge of each district, the expense being borne by the state. His duties are to devote all his time to his work, study disease prevalence, make reports to the state board, cooperate with local health authorities, and endeavor to bring about uniformity among them.

The third plan is a modification of the second. Under its provisions the state would be divided into an appropriate number of sanitary districts, consisting of one or more counties. A district board of health would be formed and composed of one representative each from the county or counties and municipalities within their borders. Each board thus constituted would appoint a full time health officer, whose qualifications would be determined by an examining board designated by the state and independent of the appointing board.

The last mentioned plan has been suggested for Kansas by a commission on public health appointed by the governor, and under the conditions prevailing in that state it would have some decided advantages. In West Virginia authority now exists for two or more counties to join in the employment of trained health officers and other agents and in the installation of a common laboratory; and the state is obligated to appropriate a sum equal to two fifths of the total amount contributed by the counties joining together in support of health work provided the qualifications of persons so appointed are approved by the public health council.

Theoretically, the appointment of full time health officers by local authority on qualifications determined by the state health agency, and their removal by this agency only for cause, would appear logical. Practically, however, the assumption of this power, in many states at least, would be contrary to public opinion and actual practice. The plan of districting the states is, on the whole, therefore, found to be the most practical one, and consequently coming more and more into favor. In the event that the federal and state governments should join in providing full time local health officers, it is probable the duties of these district officers might be merged and become those of the local officers so appointed.

DEPENDENCE OF TENURE OF OFFICE OF HEALTH OFFICERS ON EFFICIENCY

Regardless of the source of authority, whether federal, state or local, appointments of health officers must depend wholly on professional qualifications and tenure of office be based on efficiency if the best results are to be expected. Purely political considerations should have no part in the making of appointments of public servants of this character. Furthermore, such servants should be prohibited by law from engaging in other than their regular official duties. If these duties and the funds available in a particular political unit are not sufficient to justify the services of a full time officer, two or more units should be authorized, and in fact compelled by state law, to unite in the employment of such an officer. His services are surely as important as are those of county sheriff or attorney.

By such provisions, public health organization will grow and become more attractive as a field for physicians, who will be justified and encouraged in taking special courses in preventive medicine to fit them to enter this field. Moreover, universities will be compelled to perfect such courses, and public health will become more and more a paying investment on the part of the public and those engaged in it.

OPPORTUNITY OF THE MEDICAL PROFESSION IN THE DEVELOPMENT OF PUBLIC HEALTH ORGANIZATION

Finally, it cannot be too often emphasized that men and money are the first essentials for the reduction of sickness and death rates. As a result of supplying these essentials, better health organization will naturally follow.

In any event, the great body of physicians owes a duty to society in public health matters. They have it within their power to compel wise legislation, to standardize efficiency, and to keep health administration out of politics. They must enter the field of public health work in greater degree, and cooperate with and support health officers more fully, if the medical profession is to keep pace with changing conditions and to do its part toward advancement of health work and health organization.

HAY-FEVER: ITS CAUSE AND PREVENTION

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From the standpoint of the number of patients affected, hay-fever ranks among the first of the non-fatal diseases. While accurate statistics regarding the number of patients are not available, a conservative estimate has placed the number of persons in New Orleans affected with hay-fever at not less than 3,500, or 1 per cent. of the total population. Hay-fever is prevalent in the greater portion of the United States, and the proportion in New Orleans is a fair average of its prevalence in other sections. The total number of those suffering from this disease is, therefore, so large that the subject demands the most careful consideration.

Hay-fever is far more prevalent in the United States than in Europe. In the former, the autumnal hay-fever is much more common, while in Europe the spring form is the prevailing type.

SYMPTOMS

The symptoms of hay-fever in the early stage resemble those of an incipient coryza, for which it is frequently mistaken. It is attended with sneezing, blocking of the nostrils due to the swollen mucous membrane, serous discharge and, in the early stage, slight elevation of temperature, with a tendency to subnormal temperature later. There is itching of the inner canthi of the eyes and of the roof of the mouth in the region of the soft palate. The difficulty of nasal breathing, which is usually present, is worse when the patient is in the horizontal position, and less when exercising. Unlike an ordinary coryza, however, the discharge remains thin and serous and becomes mucopurulent only toward the termination of the attack.

There is usually considerable general depression, which is associated with the subnormal temperature and the discomfort of breathing. The mouth and pharnyx become dry from the impeded nasal breathing, and add to the discomfort. Many of these cases are complicated with asthma, which increases the suffering of the patient.

Relief is experienced when the supply of pollen from any cause is diminished or disappears, as on a sea voyage. A continued rain gives relief, and an absence of wind, or one blowing the pollen away from the patient, gives temporary relief. In the vicinity of New Orleans, there is a large area of ragweed (*Ambrosia trifida*) located north of a certain residential section. A wind from this direction in September causes a marked aggravation of hay-fever in this section, which, until recently, was attributed to the north wind. The causative relation of the ragweed was conclusively demonstrated, however, by exposing a number of these patients to the opposite side of the ragweed area during the prevalence of a south wind, when they promptly reacted to the pollen.

DIAGNOSIS

In spite of the greater increase in medical knowledge, many cases of hay-fever are still mistaken for ordinary colds. The symptoms described above and their recurrence at certain periods of the year should simplify the diagnosis. In doubtful cases, this may be confirmed by testing the patient with a small amount of pollen.

Some of the staminate flowers of the suspected plants are placed in a small sterile gauze bag, and this gently sniffed by the patient. In susceptible subjects, this is quickly followed by a slight reaction. The patient may also be tested by approaching the suspected weeds so that some of the pollen is inhaled in this way.

In the majority of cases, however, these tests are unnecessary and should ordinarily be avoided on account of the danger of developing a latent pollinosis. The beginning and end of the attacks are usually found to be coincident with the pollinating period of certain plants with wind borne pollen, which, with the symptoms described above, is sufficient to confirm the diagnosis.

Some physicians still believe that hay-fever is a local manifestation of some constitutional condition, in spite of the fact that the majority of patients, with similar conditions, have no such manifestations, and that when the pollen is not present, as on a sea trip, they do not occur. Improved education in the etiology of this disease, and more careful observation, will gradually correct this error.

ETIOLOGY

The development of hay-fever about the time that hay was harvested led to the belief that this was the cause of this disease, but it was not until about 1870 that the relationship of pollen was established.

The particular pollens causing this disease were for a long time unidentified. As an illustration of this, when patients developed an attack in the neighborhoods of weeds, the conspicuous goldenrod was at once suspected, and the ragweed with its insignificant green flowers unobserved. While many plants have wind-borne pollen, this also varies to a marked degree. In the case of the goldenrod, for instance, the pollen is not abundant and is dislodged with difficulty. While the pollen is toxic to susceptible patients, and will develop a reaction if applied to the nostrils, it is car-

ried by the wind to a very slight degree. P. L. Ricker, of our Research Department, and assistant botanist of the United States Department of Agriculture, in reporting to our association, states his observations that bees are abundant on the goldenrod, and that it should be classified among the entomophilous (insect fertilized plants and not the anemophilous (wind fertilized) like the ragweed, on which these insects are never found. In spite of the fact, therefore, that the goldenrod is considered an important factor in hay-fever in most reports and textbooks, it is responsible in only a small percentage of cases.

The plants which form the type of hay-fever-producing weeds are the common ragweed (*Ambrosia artemisiaefolia*) and the giant ragweed (*Ambrosia trifida*). In the former, the pollen is not only wind-borne, but is produced in such abundance that a slight blow will dislodge it in clouds, and is so light that the wind will easily carry it to a considerable distance. Under favorable climatic and soil conditions, this weed is found in every neglected field, on roadsides and even in vacant lots in the cities. In more moist lands, however, the giant ragweed (*Ambrosia trifida*) takes the place of the artemisiaefolia and is found in similar profusion. These two varieties of ragweed have been found to be responsible by our research department for about 85 per cent. of all cases of autumnal hay-fever in the sections in which these weeds are prevalent (see the Ambrosias). As the autumnal hay-fever forms the large majority of hay-fever cases in the United States, the importance of a careful study of the Ambrosias is clearly indicated.

Fig. 1.—Wormwood ragweed.

THE AMBROSIAS

The common variety (Fig. 1) is called "artemisiaefolia" on account of its leaves resembling those of the wormwood (Artemisia). It is an annual with leaves much cut and thin, opposite and alternate, as shown in the illustration. It has spikes of green flowers (staminate) at the end of the branches. The pistillate or fertile flowers are at the intersection of the branches with the stalks. It is especially found in fields where a crop of wheat, rye or oats has been harvested in early summer and afterward neglected. It grows from 1 to 5 feet in height.

It is a native of America and is found in dry soil from Nova Scotia to Florida and west to British Columbia and Mexico. It is comparatively rare and local west of Kansas, and is then replaced by *Ambrosia psilostachya, Gaertneria acanthocarpa* and *Iva axillaris,* all of which are anemophilous.

The great ragweed (Fig. 2) is called "trifida" on account of its large three-lobed leaves. It is the tallest member of the composite group, and frequently grows to a height of 12 feet. It has a stout stem with a frostlike pith. The insignificant greenish flowers form a terminal pointed cluster, which are staminate (male). The pistillate flowers, like the common variety, are located near the stalk. It is common in moist soil from Quebec to Florida, and west to Nebraska, Colorado and New Mexico. In the moist land near the Gulf Coast, it forms about 90 per cent. of all the ragweeds, while in the drier interior section of the country, the reverse is the case.

The irritating principle of both ragweeds is the pollen, which is formed in the staminate flowers, being yellowish, and almost as light as smoke. It is so abundant that during the stage of pollination it will stain one's clothes yellow while one is passing through such a field, and is so light that it is almost impossible to collect any amount of it without its being blown away.

Instead of the pollen of the ragweed being used directly for fertilization through the agency of insects, as is the case with entomophilous plants, nature has created an immense amount of pollen so that it can be carried by the wind to the distant pistillate flowers for fertilization and cross-fertilization. The pollen is so abundant that when dislodged it is called "smoking" by many farmers. The seeds are about $\frac{1}{20}$ inch in diameter and are formed in the pistillate flowers. They are solid and are not easily carried with the wind. Were the seed wind-blown like those of the thistles, eradication would be much more difficult.

POLLINOSIS

In cases of autumn hay-fever, if the patient is brought near these weeds while pollinating, so that the wind-borne pollen may reach his nostrils, he will react, the length of time depending on the amount of pollen inhaled and his resistance to pollinosis. This reaction has been demonstrated in numerous cases in New Orleans during the month of September by the research department of the American Hay-Fever-Prevention Association.

For the past seven years I have kept on hand the pollen-containing staminate flowers of the ragweeds for testing patients in the diagnosis of fall hay-fever. In susceptible patients, typical reactions can be induced by inhaling the pollen *at any season of the year.* The positive relationship of pollen to hay-fever is in this way absolutely confirmed.

The relationship of the ragweeds to fall hay-fever, in which the development of the disease, its duration and conclusions are synchronous with the pollinating period of these weeds, has been clearly established. A more difficult proposition, however, is the identification of other plants which are responsible for the remaining forms of hay-fever. These, while less frequent than the autumn form, are important, not only because they represent in the aggregate a considerable number, but also because they are frequently of longer duration. While the majority of patients have a pollinosis for the ragweeds only, many react to a number of plants, each of which prolongs the attacks.

In Table 1 is a list of the ten most common hay-fever weeds in the Southern states. As in other hay-fever weeds, their chief characteristics are as follows: They are wind-pollinated; very numerous; the flowers are inconspicuous, with no bright color or scent (these being intended to attract insects in entomophilous plants), and the pollen is formed in great quantities. The time of pollinating is given and, as will be noted,

this list is sufficient to explain cases of pollinosis for every month of the year.

TABLE 1.—HAY-FEVER WEEDS, ARRANGED ACCORDING TO TIME OF BLOOMING

1.	Parthenium hysterophorus (bastard feverfew)	January to January
2.	Rumex obtusifolius (dock)	March to July
3.	Plantago lanceolata (plantain)	April to May
4.	Phalaris intermedia (canary grass)	April to October
5.	Amaranthus spinosus (careless weed)	April to December
6.	Sorghum halepense (Johnson grass)	May to December
7.	Xanthium strumarium (cocklebur)	June to December
8.	Ambrosia trifida (giant ragweed)	August to November
9.	Ambrosia artemisiaefolia (common ragweed)	August to November
10.	Iva ciliata (marsh elder)	August to November

Laboratory investigations have shown that a large variety of pollens may develop the reaction of hay-fever when applied to the nostrils. While this is interesting from an experimental standpoint, it bears no great importance on the real etiology of pollinosis. This is dependent on the existence and proximity of plants whose pollen are not only *toxic* when inhaled but which are *wind-borne* so that the pollen may be carried for some distance and be inhaled by the patient under natural conditions, and only such will be classified in our list of hay-fever-producing plants.

INFLUENCE OF ALTITUDE

In spite of the popular belief that altitude has considerable influence in hay-fever, this is not in accordance with the facts except to the extent that at altitudes over 6,000 feet hay-fever-producing weeds are uncommon. At an elevation of from 2,000 to 4,000 feet, for instance, along the Allegheny Range in North Carolina, Tennessee and Virginia, the common ragweed (*Ambrosia artemisiaefolia*) is very common, and hay-fever correspondingly frequent.

PREDISPOSITION

With the development of bacteriology, hay-fever was also supposed to be of microbic origin and infectious. The more recent and accurate investigations on this subject have entirely disproved this belief.

The majority of textbooks state that there is present in hay-fever patients some neuropathic condition which makes them susceptible to pollinosis. While patients during an attack of hay-fever are usually nervous, partly owing to the constitutional effect of the disease and partly to the prolonged annoyance and irritation, an impartial study of all available cases fails to corroborate this.

The statement that persons of superior education and with the higher nervous temperament incident to modern life are more liable to hay-fever is also a subject for further investigation. The fact that persons living in the country are not so frequently subject to hay-fever is undoubtedly true, but the probable explanation is that the continued exposure, perhaps for generations, has eventually developed a higher resistance which reduces this susceptibility to pollinosis. A statistical report of hay-fever cases with regard to occupation, and also its relative frequency in the sexes, is under preparation by our research department.

The popular doctrine of a special predisposition for hay-fever which produces susceptibility in some persons needs revising. In the first place, this predisposition varies with different individuals. In the tests made by our research department, it was found that some patients reacted to exposure in two minutes, while in others the reaction did not develop for from five to thirty minutes, and even as late as two or three hours. In some cases there was only a transient irritation of the eyes and of the mucous membrane, and in others this was severe and lasted from one to forty-eight hours. Not only were these tests made in the laboratory, but also the exposures were made under natural conditions in localities infested with the hay-fever-producing weeds.

It would appear, therefore, that there is a wide difference in the degree of susceptibility of different individuals to the pollen. The question is, What are the limits of this susceptibility?

Fig. 2.—Great ragweed.

A logical explanation is that the pollen of certain plants contains a toxin to which all are susceptible, but that its effects are more or less inhibited by the individual resistance. An attack would, therefore, develop only when the exposure overcomes the resistance of the subject and only to this extent.

As an illustration that even great normal resistance may be overcome by a still greater exposure, the following cases which occurred last September at Hendersonville, in the mountain region of Western North Carolina (elevation 2,350 feet) are instructive. The natives of this section are rarely subject to hay-fever; in fact, the general opinion is that they are immune. Two farm laborers, aged 43 and 35, respectively, were stripping corn for fodder. Adjoining the field and to windward was a large quantity of ragweed (*Ambrosia artemisiaefolia*), the pollen of which blew like dust over the field so that the corn was stained yellow. The same evening both men developed typical attacks of hay-fever with marked symptoms lasting forty-eight hours.

Here were two persons with so high a resistance that, until the age of 43 and 35, respectively, they were considered immune, but developed typical attacks of hay-fever after extraordinary exposure.

When the attack has once been developed, clinical experience shows that the susceptibility of the patient is increased, indicating that the resistance has been lowered. The apparent resemblance of this to anaphylaxis is apparent and will be investigated further.

CAUSE OF REACTION

The manner in which pollen excites reaction forms an interesting subject of investigation. That this effect is mechanical is untenable, as a large percentage of hay-fever patients, except when under the influence of pollinosis, will inhale dust without greater discomfort than other persons, and others with extremely sensitive nostrils have not developed pollinosis. Many pol-

lens with prickly coatings fail to produce irritation, while the pollen of the ragweed is without spikes but develops marked reaction.

It has also been asserted that the pollen, under the influence of nasal secretion, germinates and sends out its pollen germ tubes, thus producing the irritation. This germination takes place, however, only in the presence of sugar, which is absent in the nasal secretion, and is inhibited by sodium chlorid, which is present. The analysis of this secretion is given in Table 2.

TABLE 2.—COMPOSITION OF THE NASAL SECRETION[1]

Water	993.00
Mucosin	53.30
Sodium lactate	1.01
Organic crystalline principles	2.00
Sodium and potassium chlorid	5.60
Phosphates	3.50
Sodium phosphate and carbonate	0.90

It has been found, moreover, that the process of germination usually requires about two hours, while the local reaction of hay-fever may take place in a few minutes.

In a solution containing the salts found in the nasal secretion, many pollens quickly burst and distribute their contents. Other pollens can resist the action of this solution, which explains their failure to produce reactions. This subject is still under investigation by our research department.

In considering the cause of hay-fever, therefore, we can first limit our attention to the pollens which are wind-borne. Of these, only such are toxic which fail to resist the action of the nasal secretion. The degree of resistance will influence the length of the interval between the exposure and the resulting reaction. The absorbed toxin will produce a reaction and constitutional disturbances in the inverse ratio of the patient's resistance.

REACTIONS FROM THE PRESENCE OF ANIMALS

The susceptibility of persons to the presence of cats, horses and other animals should be distinguished from true pollinosis. Many of these cases are psychic in character; but when actual reaction takes place, it is probably due to the skin emanations of such animals. As the prophylaxis in such cases is self-evident, and the cases do not come under the classification of hay-fever, they will not be further considered in this connection.

FAILURE OF TREATMENT

A careful study of medical literature indicates very clearly that the treatment of hay-fever, except as far as temporary alleviation of the symptoms is concerned, has not been a credit to the medical profession. Pollantin, which was heralded as a cure some years ago, has been successful in my hands in so few cases that I have long since discontinued to recommend it, and this has appeared to be the general opinion of the medical profession.

The treatment by gradual immunization with the specific pollen inhalation before the season of the usual attack, which I introduced in 1908, proved successful in a considerable number of cases, but the effects were not prolonged over a single season, and, as the majority of patients feared to prolong their hay-fever attack without the assurance of permanent relief, and promises to the contrary could not be conscientiously given, it was gradually discontinued.

1. Robin: Leçons sur les humeurs, Paris.

Serum and vaccine therapy have been advocated in hay-fever as in the majority of other diseases, but the general results have been unsatisfactory, and the majority of patients decline this severe treatment without a reasonable guarantee of permanent benefit.

The removal of the patient from the irritating pollens by sea voyages, altitudes and climates where the offending weeds are not found gives temporary relief, but is available to only a few.

The majority of hay-fever patients present no unusual abnormal intranasal condition except during the attack, and operations for nasal obstruction, unless indicated for other reasons, have been successful in comparatively few cases and are, therefore, rarely advisable.

PREVENTION

Even had therapeutic measures been more successful, prophylaxis, based on the removal of the exciting cause, should have been advocated as in malarial and typhoid fevers, tuberculosis and other diseases of known cause. Hay-fever, however, has been the stepchild of preventive medicine, and until recently no organized efforts in this direction have been undertaken.

In view of the great and increasing number of hay-fever patients, their prolonged distress, the unsuccessful results of all curative measures and the distinctive preventable character of the disease, the American Hay-Fever-Prevention Association has undertaken a campaign of education, to be followed in due time by suitable legislation, for the prevention of hay-fever.

In the educational part of this work, the first consideration is the correct diagnosis of hay-fever and the acceptance of the fact that all cases of true hay-fever are the results of pollen inhalation.

The identification of the various weeds and plants that may develop hay-fever is of the utmost importance, but will gradually follow the establishing of the etiology of pollinosis. As these principles become better understood, the physician, when consulted by a patient with hay-fever, instead of limiting his attention to writing a prescription or injecting a vaccine, will investigate the presence of hay-fever-producing weeds in the neighborhood of the patient's residence or vocation. In many cases, the eradication or even the cutting of such weeds produces immediate results.

In one of my patients, the offending weed (*Ambrosia artemisiaefolia*) was growing in his garden. In another, a schoolteacher, affected with hay-fever for many years, on being questioned stated that there was an abundance of flowering weeds in the vacant lots adjoining her house. When specimens of these weeds were produced, they were found to be the *Parthenium hysterophorus*, one of the causes of hay-fever in South Louisiana. In both of these cases, marked relief soon followed the cutting of these weeds. In order to obtain complete relief in such cases, however, the cutting of the weeds should be over a considerable adjoining area, as the pollen is wind-borne to a distance depending on the velocity of the wind.

While the removal of the offending weed is the correct measure, relief may also be obtained, when this is impracticable, by avoiding the proximity of weeds known to be toxic to the patients. In many cases this is entirely practicable, as shown in the following case in which the attack was postponed for thirty-three days:

E. G., manager of a sugar plantation near New Orleans, has been a sufferer from hay-fever for the past ten years,

the attacks always commencing about August 25. After the influence of the ragweed to this form of hay-fever had been explained to him, he concluded that his attacks were due to the pollen of the trifida ragweed which grows on a road some distance from his residence. He therefore avoided the road, and until September 28, for the first time in ten years, he had had no attack. On this date, he found it necessary to pass this road. In twenty minutes he commenced to sneeze, that night he had a violent attack, and the following day he had his usual annual hay-fever.

The treatment of cases by the eradication of the hay-fever-producing weeds will not only produce direct results, but will also prove a powerful impetus in educating the public in the relationship of such weeds to hay-fever. It will result, moreover, in having these weeds considered from a new point of view. Instead of simply indicating neglect or careless cultivation, they will be looked on as a source of disease and discomfort to a large class of sufferers. This will not only bring the leverage of public opinion to the eradication of these weeds, but will eventually simplify the question of legislation.

In connection with the question of public education, the American Hay-Fever-Prevention Association has received a communication from Dr. Rupert Blue, surgeon-general of the United States Public Health Service, and one of the honorary vice-presidents of our association, in which he summarizes this in a very concise manner:

> It appears that the most practical method of securing the cooperation of the public would be by education as to the effect of the presence of these weeds in communities from both health and economic standpoints. This seems to be the primary object of your association, which is to be commended for its efforts.

SPRING HAY-FEVER

Some of the early forms of hay-fever are due to the pollen of the Graminaceae or grasses, which include the cultivated varieties, such as rye, wheat, corn, etc. These form a common cause of hay-fever in England and the continent, where the autumnal form due to the ragweed is not found, owing to the absence of the weed.

While this is of much less frequency than the fall hay-fever in the United States, it represents in the aggregate a considerable number. When these cases are due to the cultivated varieties, the knowledge of this fact should induce the patient, whenever possible, to live away from such cultivated fields or at least to avoid them during the active season of pollination. Only in those cases in which the removal of the offending plant is impossible will the question of treatment be given preference over prevention.

ERADICATION OF HAY-FEVER-PRODUCING WEEDS

As the autumnal hay-fever is the most prevalent form in the United States, and, in the majority of cases, is due to ragweed, the American Hay-Fever-Prevention Association has given its first attention to the eradication of this weed. The description and illustration of both varieties (*Ambrosia artemisiaefolia* and *trifida*) have been sent to the state boards of health of each state and of the District of Columbia. Many of these have published the cuts and descriptions, and a number have sent them to the newspapers of their state for publication.

The United States Department of Agriculture has assisted and is furnishing valuable information for this work. Arrangements have been made with the Hygienic Laboratory of the Public Health Service at Washington to make investigations on the hay-fever pollens submitted by our research department. Encouragement or promise of active cooperation has been offered by the majority of the state boards of health, these being as follows: Arkansas, Alabama, Arizona, California, Colorado, Delaware, Florida, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Nevada, New Hampshire, New Jersey, New York, North Carolina, Oregon, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin and Wyoming.

The common ragweed (*Ambrosia artemisiaefolia*), while found in great abundance, presents no special difficulty in eradication, as it is an annual and reproduced only by seed. In carefully cultivated lands it is not found in appreciable quantities. Where the land is not cultivated, this weed may be entirely kept down by grazing cattle. When, however, it has been neglected, the weed should be mowed before the latter part of August, in order to prevent pollination.

The giant ragweed (*Ambrosia trifida*), which grows in similar abundance in the moist lands of the coast, presents a more difficult problem, as the roots are perennial. Until this weed is 2 feet in height, cattle will feed on it with avidity, which will probably prove useful in destroying it. In carefully cultivated lands, it is rarely found. The question of the best scientific method of eradication of both the ragweeds has been referred to the United States Department of Agriculture, and the results of this investigation will be reported later.

ORGANIZED CAMPAIGN AGAINST HAY-FEVER-PRODUCING WEEDS

With a view of showing what can be accomplished by organized efforts in the prevention of hay-fever, the American Hay-Fever-Prevention Association has concentrated its first efforts in New Orleans in the following manner:

The public was first educated regarding the ragweeds, so that they could be easily recognized. Illustrations of the weeds were published in the *Bulletin* of the State Medical Board of Health and the public press, and the live weeds, in full development, were exhibited in a show-window of the principal street.

The city of New Orleans, through the commissioner of public works, placed at the disposal of the association twenty convicts, who cleared the streets and sidewalks of the outer sections of the city of the weeds, in accordance with a map prepared by the topographic committee of the association showing the areas infected with ragweed. The city board of health assisted by enforcing the cutting of weeds in vacant lots and the commissioners of the various parks had the ragweed destroyed in the public parks under the direction of the association.

Valuable assistance was given by the Women's Civic League, which appointed a special committee on vacant lots. This committee made arrangements with labor bureaus so that it not only reported lots infected with weeds but offered to send workmen to cut them at low rates.

The storm of September 29 destroyed practically all the leaves and flowers of the remaining giant ragweed in exposed places. As a result of this, and the efforts of the American Hay-Fever-Prevention Association, fall hay-fever practically disappeared in New Orleans several weeks earlier than the usual time. This cam-

paign will be resumed next spring, when its management will be placed in the hands of the state hay-fever-prevention associations.

The American Hay-Fever-Prevention Association believes that what has been effected in New Orleans can be done in all towns and cities. In some of the smaller towns, especially those catering to summer visitors, this could be accomplished before next summer. The statement that a town is free of hay-fever will prove an advertisement that will easily repay the cost of destroying the hay-fever-producing weeds.

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POLLEN EXTRACTS AND VACCINES IN HAY-FEVER *

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Therapeutic experiment presupposes a more skeptical point of view, more conservative judgment, and less enthusiasm for results than any other form of experiment in medicine. To obtain results of value, one must not attempt to prove anything, especially when the proof will depend to a great extent on statistics. In collecting statistics, some cases are thrown out from one series while similar cases are left in the control, and other errors creep in despite the most honest efforts of the investigator.

The history of the treatment of hay-fever contains many variations. Nose operations, thyroid extract, calcium, pollantin and bacterial vaccines have been lauded from time to time as sure cures. The disease from its very nature lends itself to just such occurrences; perhaps in no disease are the sufferings so intense and prolonged and the final results so slight. Patients are anxious to be cured, and are willing to try almost anything. As a result of this feeling, sincere efforts of scientific investigators are prematurely pushed on the profession by commercial houses, and today Koessler's[1] prophecy of a year ago is already filled. The results of scientific investigations and the promises of the commercial literature on specific therapy of hay-fever can hardly be said to correspond; scientifically speaking, the whole subject must still be considered in an experimental stage. Therefore we have deemed it wise to present our studies at the present time, hoping that they will throw some light on the problem.

Blackley[2] first established the etiologic rôle of pollen in hay-fever, and Dunbar[3] was the first to employ modern methods to the study of specific treatment. It can be stated now without fear of contradiction that the pollen of various grasses and plants produces hay-fever. It has not as yet been definitely proved that pollen is the sole etiologic agent. The early rose-fever of this country, which is the common hay-fever of England, is caused in the main by the grasses, especially red top, timothy and blue grass. The autumnal catarrh — by far the most common form in the United States — is caused by members of the *Compositae* family, mainly ragweed. No better proof of the etiologic rôle of pollen in hay-fever need be asked for than the production of a typical attack in midwinter by injection of a dose of pollen extract in a susceptible person, or by the fact that a specific skin or eye reaction can be obtained at any time with such a person. In normal persons this reaction is never obtained.

Dunbar's conception of the pollen as a true toxin, and his attempts at passive immunization of the disease by a serum obtained from horses injected with increasingly large doses of pollen, are too well known to require further mention. Following the work of Dunbar, the next most important development in the treatment of hay-fever was active immunization of the patient with extracts of pollen, the pioneers in this work being Noon,[4] Koessler and Clowes.[5] Noon's work, as well as that of his successor, Freeman,[6] was along the regular line of therapeutic inoculations of Wright's laboratory. Koessler's was supported by many laboratory experiments demonstrating that hay-fever is a pollen protein sensitization. The similarity of the symptoms of hay-fever to the usual symptoms of anaphylaxis is now generally understood.

The therapeutic effect of increasingly large injections of pollen extract has now been tested and reported by several workers, as seen in Table 1. We do not wish to draw conclusions from this table, but merely to show that as far as we have been able to gather there are 332 cases reported in the literature, of which 241 are available for the study of clinical results.

TABLE 1.—REPORTS IN THE LITERATURE

Author	Reference	Number of Cases	Cured	Greatly Relieved	Relieved	No Effect	Worse
Freeman	Lancet, London, 1911, ii, 814; 1914, i, 1178	84	24	30	22	8	..
Lovell	Practitioner, London, 1914, xcii, 266	10	..	3	2	5	..
Lowdermilk	THE JOURNAL, July 11, 1914, p. 141	19	16	..	..	3	..
Manning	THE JOURNAL, Feb. 20, 1915, p. 655	21	..	14	4	2	1
Goodale	Boston Med. and Surg. Jour., 1915, clxxiii, 42	[79*] 34	..	.. 26	.. ..	.. 8	.. ..
Oppenheimer and Gottlieb	New York Med. Jour., 1915, ci, 229	11	1	8	..	2	..
Ulrich	THE JOURNAL, Apr. 18, 1914, p. 1220	[12†]	..	..	..	..	..
Ellern	Deutsch. med. Wchnschr., 1912, xxxviii, 1390	13	..	6	5	2	..
Koessler	Illinois Med. Jour., 1914, xxvi, 120	41	4	29	..	8	..
Clowes	Proc. Soc. Exper. Biol. and Med., 1913, x, 69, 70	8	..	8	..	..	..
Available		241	45	124	33	38	1
Total		332	..	..	..	..	..

* Tested by eye test.
† Majority relieved.

If they are classified merely as cured, relieved and negative, we find forty-five cured, 157 relieved and thirty-eight uninfluenced. Most of Freeman's and Koessler's cured patients received injections for more than one year. Lowdermilk's[7] results require special interpretation because he says bacterial vaccines were used in cases complicated with infection. This will

* Read before the Chicago Society of Internal Medicine, Nov. 22, 1915.

* All the laboratory work done in connection with this study is from the Nelson Morris Institute for Medical Research of the Michael Reese Hospital.

1. Koessler: Illinois Med. Jour., 1914, xxvi, 120.
2. Blackley: Experimental Researches on The Cause and Nature of Hay Fever, London, 1873.
3. Dunbar: Deutsch. med. Wchnschr., Nov. 13, 1911.
4. Noon: Lancet, London, 1911, ii, 1572.
5. Clowes: Proc. Soc. Exper. Biol. and Med., 1913, x, 69, 70.
6. Freeman: Lancet, London, 1911, ii, 814; ibid., 1914, i, 1178.
7. Lowdermilk, R. C.: Hay Fever, THE JOURNAL A. M. A., July 11, 1914, p. 141.

be discussed subsequently. There has been no standard technic either in method of preparation of the extract or method of injection, so obviously no comparisons can be made between the results obtained by different workers.

As far as these statistics prove anything, they show that, as used up to now, pollen extracts have the possibility of cure and have apparently relieved a majority of patients.

From the time of Blackley and Dunbar, many so-called specific micro-organisms for hay-fever were discovered. Today no one believes that bacteria cause hay-fever, but there is a certain amount of evidence that bacteria play a rôle in the disease. Bacterial vaccines have been used in the therapy of the disease. Morrey,[8] for instance, on the theory of "strengthening the nasal mucosa so that irritants, whatever they are, would be without effect," injected eight patients with autogenous nose vaccines and reported relief in all. Freeman, although using pollen extract, stated that "it seems probable that an attack of hay fever may be the starting point of a bacterial infection, or a catarrh of the air passages may predispose to hay fever." As mentioned above, Lowdermilk, using bacterial vaccines "where infection existed," along with active immunization with pollen extract, reports the highest percentage of cures from pollen therapy. The importance of his results cannot be determined because he does not mention what he considers infection, nor does he specify the cases in which vaccines were used. Our own interest in this question was stimulated by the remarkable results obtained from autogenous nasal vaccines in a man for years a sufferer from rose-fever who, following a few intensive injections, was so completely free from symptoms as to be able to go to New York by rail.

It is difficult to reconcile good results from bacterial vaccines in a disease the symptoms of which are so essentially the symptoms of a pollen protein sensitization. On the other hand, if the disease is purely a pollen protein sensitization, one might expect better therapeutic results with active immunization against the pollen protein. But there can be no logical objection to the assumption that even if pollen produces the disease, bacteria may play a secondary but important rôle in its unfolding.

As Adami[9] and others have contended for some time, absence of suppuration or actual inflammation does not prove absence of infection, or, to use his term, "subinfection." In this state "bacteria . . . do not multiply and set up foci of suppuration; they are destroyed; but with their destruction the liberation of their toxins causes a poisoning of the cells immediately around them, and the accumulative action of these toxins . . . brings about the death of certain cells." In hay-fever may there not be a condition of subinfection in the nose, produced, perhaps, by the inhalation of pollen and prolonged by the pathologic stasis of an attack? This conception of dual etiologic factors is not without analogy in pathology. As Adami has pointed out, Opie's[10] experiments on cirrhosis of the liver are illuminating. Chloroform will destroy liver cells but will not produce cirrhosis; likewise sublethal doses of *Bacillus coli* will not produce cirrhosis, but the combination of the two together produces cirrhosis. An example of protein sensitization associated with bacterial infection may be seen in a patient of ours who developed urticaria following the ingestion of any protein, which was definitely proved to be due to an intestinal infection, and which was cured permanently only when the intestinal infection was cured.

The conception of hay-fever as a pollenosis associated with a bacterial subinfection can be expanded to explain the partial relief obtained by bacterial vaccines and by pollen extracts. If the inhalation of pollen in a susceptible individual sets up a condition of nasal subinfection, then this infection of the nasal mucous membrane will allow the absorption of even more pollen. Thus a vicious circle is established, the influence of specific therapy on which seems apparent. Bacterial vaccines alone will relieve symptoms because less pollen enters the system, but will not cure because they cannot influence the condition of pollen protein sensitization. On the other hand, the immunity produced by active immunization is not sufficient because the rate of its production cannot keep pace with the rate of absorption of pollen from the irritated mucous membranes. Combined treatment with bacterial vaccines and pollen extract should be able to control both factors. Possibly Lowdermilk's very high percentage of cures can be explained on this basis.

Proof of such a conception practically is limited to therapeutic experiments. We therefore planned a series of inoculations which were to be carried on for three years. In the first year bacterial vaccines were to be tested, in the second pollen extracts, and in the third combined treatment. Our patients were peculiarly adapted for such a procedure as most of them have been under observation for a number of years; and their behavior under varied conditions was fairly well known. For reasons which will appear later, this course was interrupted this year. Our results are reported now merely because they seem to support the theory expounded and seem to offer therapeutic promise.

TREATMENT WITH BACTERIAL VACCINES

The results of bacterial vaccines will first be discussed. All the autogenous vaccines were made from cultures on blood agar taken from within the nose. In most instances a pure culture of *Staphylococcus albus* was obtained, and more rarely the pneumococcus and *Micrococcus catarrhalis* were found. Thirteen patients were treated during the attack, five for early June fever, eight for autumnal fever. Of the five treated for June fever, two received some relief, one was greatly relieved and two were for all practical purposes cured for the season. One of these, however, whose symptoms pointed to both spring and autumnal pollenosis, had a complete relapse, August 17, and this was entirely uninfluenced by the bacterial injections.

Of the eight patients with autumnal hay-fever, one was able to stay in the country and even ride in automobiles without disturbance, and although she had been a sufferer for years volunteered the information that "she had never had such a good summer." This patient is of particular interest in that she was continually comparing her "case" with that of friends receiving pollen extract; and she was of the opinion that she was better off than her friends. Five had undoubtedly lighter attacks of shorter duration, and two had no relief. Some of these patients have been subsequently treated and will be discussed in a short

8. Morrey, Charles B.: Vaccination with Mixed Cultures from the Nose in Hay Fever, THE JOURNAL A. M. A., Nov. 15, 1913, p. 1806.
9. Adami: Brit. Med. Jour., 1914, i, 177.
10. Opie: Tr. Assn. Am. Phys., 1910, xxv, 140.

time. It is only fair to say that before injections were started the patients were told that they would probably receive no benefit from them, but that the treatment would be harmless. In fact, throughout this work we have adopted an attitude of extreme skepticism when discussing probable results with patients. This attitude has been purposely adhered to in order to eliminate the psychic influence as far as possible.

The results can be seen summarized in Table 2. "Cured" indicates that there was complete relief of all symptoms; "greatly relieved" means that some symptoms still remain; "relieved" means that some were relieved (either attacks were less frequent, less severe, or that the more severe symptoms, asthma, for instance, were absent); "no effect" signifies that there was no relief at all. Broadly speaking, 64 per cent. of the patients injected showed some signs of improvement, while 36 per cent. were absolutely uninfluenced by treatment.

TABLE 2.—RESULTS OF TREATMENT WITH BACTERIAL VACCINE

Type	No. of Cases*	Cured	Greatly Relieved	Relieved	No Effect
Spring	5	2	1	0	2
Autumnal	9	0	4	2	3
Percentages of total		14	36	14	36

* One case of combined spring and autumnal pollenosis is recorded twice.

TREATMENT WITH POLLEN EXTRACT

Probably the best attempt to standardize pollen therapy has been made by Koessler, and in our work we followed his technic. We were not in a position to use extracts of pollen of grasses, so no cases of the early fever were treated. Quantitative eye tests for susceptibility were done in every case except five, in which treatment was started during the attack; but no attempt was made to control dosage by the results of the test during treatment. This was decided on because most workers (Freeman, Koessler, Lowdermilk, Goodale,[11] and Ellern[12]) have found that the results of the quantitative eye or skin tests do not correspond with the actual immunity, any more than the measurement of agglutinins in typhoid serum is an index of actual resistance to the typhoid bacillus. Furthermore, in order to obtain statistics comparable with our vaccine cases, it was necessary to rely on clinical results. Since these are mainly subjective, they are necessarily open to wide interpretation. We therefore marked the patients on the basis of their attacks in previous years, just as the results with bacterial vaccine treatment had been estimated, and no other possible factor was allowed to influence the mark. This method, while necessarily not accurate, seemed to us the most logical for our purpose.

TABLE 3.—RESULTS OF POLLEN THERAPY*

	No. of Cases	Cured	Greatly Relieved	Relieved	No Effect
Prophylactic	16	0	4	6	6
Phylactic	5	0	3	2	0

* In addition to this series treated with pollen extract of our own were two treated with Lederle's extract without results. Through the courtesy of Dr. Morgenthau, we are also allowed to report six cases treated by him with our extract, of which four showed no results, one patient was somewhat relieved, and one very markedly benefited.

In our series were sixteen patients, treated prophylactically beginning in May, and five treated during the attack. In seven a decided improvement over last year, and in eight a noticeable improvement is seen. Five of these patients had been under treatment with bacterial vaccines previously, and a comparison of results is seen in Table 4.

TABLE 4.—COMPARATIVE RESULTS IN FIVE CASES

Case Number	Bacterial Vaccines	Pollen
6	Greatly relieved	Relieved
7	Relieved	Relieved
9	Greatly relieved	Relieved
10	No effect	Relieved
12	Greatly relieved	Greatly relieved

In the early part of this summer hay-fever was very light, and for that reason we felt unable to estimate just what were our results. The general impression of most of the patients was that, compared to patients not receiving pollen, they were having comparatively milder symptoms.

During a hot spell in September, three of the patients, who up to then had been free from symptoms, had most severe attacks of hay-fever. Autogenous vaccines were immediately made and intensively injected. In these three patients, and a fourth in whom vaccine therapy in a previous year had been beneficial, most surprising results were obtained. The three patients who had been having most intense attacks of hay-fever showed after the first injection an almost complete disappearance of symptoms. The fourth patient, who was having only mild attacks at the time, also reacted with a disappearance of symptoms. In all four the vaccines were continued until the end of the season, and in all the results were almost unbelievable and can hardly be called other than seasonal cures, as the patients had no subsequent attacks. While these results might have been due to the previous inoculations of pollen extract, comparison with the other patients renders this interpretation improbable. Three of these patients had received autogenous vaccines in previous years with some amelioration of symptoms.

DISCUSSION OF RESULTS

As stated in the beginning, interpretation of therapeutic experiments is extremely difficult. In our tables not a case was thrown out for any reason. Perhaps the most conservative way of comparing results is in figures: 64 per cent. of the patients receiving vaccines and 70 per cent. of those receiving pollen extract apparently had a milder season than previously. Vaccine therapy seemed to give equal or better results than pollen extract in the individual cases. The past year was an unusually favorable one for hay-fever subjects, but in no case was there a cure from the pollen extract. Whether the amelioration of symptoms either year was due to the therapy cannot be determined. The four patients receiving combined treatment were cured for the season, but the number treated is entirely too few to permit of any definite conclusions. The theory on which combined specific therapy is based seems tenable, and the results so far obtained seem to support the theory; although it is of course possible that, in the light of newer interpretations of certain so-called specific reactions, some other explanation of our results

11. Goodale: Boston Med. and Surg. Jour., 1915, clxxiii, 42.
12. Ellern: Deutsch. med. Wchnschr., 1912, xxxviii, 1590.

may subsequently be offered. Whether the method of prophylactic pollen therapy combined with phylactic vaccines is the proper one cannot be judged as yet. The question is open and can be decided only by a larger experience than that reported here.

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THE TREATMENT OF HAY-FEVER WITH CALCIUM SALT

WITH A REPORT OF TWENTY-SIX CASES

HAROLD WILSON, M.D.
DETROIT

The reports of Emmerich and Loew[1] on the very favorable results secured by them from the prolonged administration of calcium chlorid in the treatment of hay-fever induced me to make some trial of this drug during the season of 1915. A brief report of the results will be given in this communication.

Whether the ingestion of calcium salts has a direct inhibitory action on the proteolytic reactions which appear to be a necessary part of the hay-fever complex, or so modify this reaction as to render the split proteins less toxic, or whether they act by lessening the patient's nerve irritability, seems at this time to be quite undetermined. The employment of calcium salts in hay-fever would be on a much better basis if we were able to rationalize it. At present, it seems to me that this method of treatment can hardly claim to be more than "reasonable empiricism." In view of the fact, however, that much other useful therapy rests on a no more secure foundation than this, there is no reason why we should not make a sufficient trial of this method, which has, certainly, many practical advantages.

Twenty-six patients were treated by me during the past season. Of these, twenty-two were treated exclusively with calcium chlorid, and four patients, who had been under treatment by means of injections of pollen solution, were given the drug when their hay-fever symptoms began to develop more or less severely.

One patient had hay-fever of the vernal type only; three patients had both vernal and autumnal attacks, and twenty-two patients had only autumnal attacks. Twenty-two patients gave a positive ophthalmic or cutaneous reaction to ragweed pollen; four gave a negative reaction to ragweed. Many cutaneous tests were made with substances other than pollens, the result of which will be made the subject of another report.

Treatment was begun in June, with seven patients; in July with four; in August with fifteen, and in September with two. In no case did any patient take the drug for more than eight or ten weeks before the time of the expected attack, and in most cases the period was much more brief. Emmerich and Loew advise the use of the drug over a very long period, as much as a year, if possible. Although it has been shown that the maximum calcium retention in the system occurs only after its prolonged ingestion, it remains to be proved that its optimum therapeutic effect in hay-fever requires its daily use for a year before the expected attack. In some of the most favorable cases here reported, the relief secured came almost at once, or after taking, at most, only a few doses.

For most patients the calcium chlorid was prescribed thus:

> Calcium chlorid, crystals..... 100 gm.
> Distilled water to make..... 500 c.c.
> M. Sig.: Take one teaspoonful in sufficient water during or after each meal.

This gives the patient about 3 gm. of calcium chlorid daily. The crystalline salt is used in preference to the anhydrous, as making a cleaner and clearer solution. When the anhydrous salt is prescribed, allowance should be made for the water of crystallization, of which in the crystalline salt there are six molecules ($CaCl_2+6H_2O$):

> Calcium chlorid, anhydrous..... 50 gm.
> Distilled water to make..... 500 c.c.
> M. Sig.: Take one teaspoonful in sufficient water with or after each meal.

There was no serious difficulty in taking the drug as thus prescribed. One patient experienced gastric distress until the dose was reduced; another complained of weakness and loss of appetite, and had to use it intermittently in a lessened dose; another thought it caused a diminution in the urinary output, while another thought the flow of urine was increased. It has not been observed that the daily ingestion of 3 gm. of calcium chlorid has been followed by any marked bodily disturbance. In fact, much larger doses than

RESULTS OF TREATMENT WITH CALCIUM CHLORID IN TWENTY-SIX CASES*

Case No.	Type of Hay-Fever	Reaction to Ragweed	Duration of Treatment	Result	Remarks
12	A	+	2-3 weeks	+	Under treatment with injections of pollen solutions for ten weeks previously
13	A	+	2-3 weeks	+	Previous treatment as in Case 12
14	A	+	2-3 weeks	+	Previous treatment as in Case 12
19	A	+	2-3 weeks	+	Previous treatment with injections of pollen solutions seven weeks
22	A	+	10 weeks	0	
23	A-V	—	13 weeks	+++	Immediate improvement and absolute freedom from all symptoms after July 28
24	A	+	11 weeks	+++	Multiple sensitization
25	A	+	13 weeks	+	No symptoms until September 1
26	A	+	16 weeks	+++	No symptoms until September 25. Then only trifling itching in throat and slight sneezing. No other symptoms
27	A	+	12 weeks	—	September 25, patient writes, "I was worse than usual"
29	A	+	8 weeks	+++	Only slight symptoms
30	A	+	3 weeks	+	
31	A	+	9 weeks	+	Multiple sensitization (faint)
32	A	+	4 weeks	+	Multiple sensitization
33	V	—	9 weeks	++	Immediate relief and practical freedom from all symptoms about half the time
34	A-V	+	5 weeks	+	Reports moderate relief from symptoms during season
35	A	+	4 weeks	+	Multiple sensitization
36	A	+	.....	.....	No report
37	A	+	5 weeks	++	Very little hay-fever, even in country
38	A	+	4 weeks	+	Multiple sensitization
39	A	+	4 weeks	+	
40	A	+	4 weeks	++	Multiple sensitization
41	A	+	4 weeks	++	Did not take drug regularly
42	A	—	5 weeks	+++	Peach reaction positive; stopped eating peaches
43	A	+	2 weeks	+	Left city early in September
44	A-V	—	13 weeks	+++	Relief immediate and complete; slight recurrences; took drug very irregularly

* Explanation of signs: A indicates autumnal; V, vernal; —, symptoms worse than usual; 0, symptoms about the same as usual; +, symptoms less marked than usual; ++, symptoms much less marked than usual; very definite improvement; +++, absolute freedom from symptoms, or only trifling and insignificant ones during season.

1. Emmerich and Loew: Erfolgreiche Behandlung des Heufiebers durch lange Zeit fortgesetzte Chlorkalziumzufuhr, München. med. Wchnschr., 1913, lx, 2676; Weitere Mitteilungen über Erfolgreiche Behandlung des Heufiebers, ibid., 1914, lxii, 41.

this can apparently be taken with entire safety. Cow's milk contains 0.198 per cent. calcium monoxid. A pint of milk contains about 0.71 gm. calcium. Three gm. of calcium chlorid crystals contain about 0.55 gm. calcium, so that more lime is taken by the daily use of a pint of milk than in the dosage prescribed above.

The accompanying table gives the results of the treatment with calcium chlorid in the twenty-six cases under observation.

REPORT OF CASES

A few of the most favorable reports are given in greater detail:

CASE 23.—Miss M. T., aged 21, had had hay-fever since childhood, beginning in May and lasting until frost. She was sensitive to flowers of all kinds, to dust and to wind. She could not sweep floors without marked discomfort. She had no asthma. Eye and nasal symptoms were most marked. She had been using epinephrin solutions until they now aggravated the trouble. July 2, there were lacrimation, coryza and sneezing of moderate severity more or less continuously. Ophthalmic and cutaneous reactions to ragweed were negative. Calcium chlorid, 1 gm., three times a day, was prescribed. July 9, eyes were "wonderfully better"; there were somewhat less sneezing and coryza; the patient was less sensitive to dust and wind. July 20, she was much less uncomfortable than usual. On the whole, there was a marked amelioration of symptoms. July 28, there was very great relief. The patient was practically free from all symptoms. "I never was so helped by anything before." August 13, the patient reported that she had had no hay-fever symptoms whatever since last visit. Relief was absolute. September 6, absolute freedom from symptoms continued. This relief continued throughout the season.

CASE 26.—Miss M. R., aged 25, had had autumnal hay-fever seven or eight years; no asthma. Maternal aunt had had hay-fever since childhood. Ophthalmic and cutaneous reactions to ragweed were positive. June 11, calcium chlorid was prescribed, 1 gm. three times a day, but owing to some gastric distress which it seemed to cause, the dose was much reduced for several weeks. The full dose, however, was taken later and continued. No hay-fever symptoms were experienced until September 5, when there was slight sneezing, and itching in the throat. During the rest of the season symptoms were practically absent.

CASE 29.—Dr. W. A. K., aged 40, had had autumnal hay-fever for fifteen years, and slight asthma recently. July 7, calcium chlorid was prescribed, 1 gm. three times a day. Patient reported in October that he had experienced only trifling symptoms at any time during the season.

CASE 33.—Miss F. P., aged 43, had had vernal hay-fever, usually beginning about June 1 and lasting until the end of July. June 12, she was having about the usual amount of trouble. The ophthalmic reaction to ragweed was negative. Calcium chlorid, 1 gm., three times a day, was prescribed, with much relief, almost at once. She reported, August 25, "I have been practically free from symptoms about half the time. The rest of the time, partly free, and partly in trouble. About July 28 took a long railway journey, weather dry and dusty, with no hay-fever symptoms at all."

CASE 42.—F. W., aged 28, had had hay-fever beginning in August for several years. Father had hay-fever; no asthma. Ophthalmic and cutaneous reactions to ragweed were negative. Cutaneous and nasal reaction to peaches was positive. Calcium chlorid, 2 gm., three times a day, was prescribed. August 25, the patient was very comfortable, with scarcely any symptoms. Cutaneous reaction to peaches was negative. The patient had stopped eating peaches. During the rest of the season there were very few hay-fever symptoms.

CASE 44.—Miss C. S., aged 25, had had hay-fever for nine years, beginning in early spring and lasting until the second week in October. She had asthma. Symptoms were marked. June 30, the hay-fever symptoms were distressing. Ophthalmic and cutaneous reaction to ragweed was negative. Calcium chlorid, 1 gm., three times a day, was prescribed. Patient reported September 25. The hay-fever symptoms, which were severe, disappeared after the second dose of the medicine, whereupon she promptly stopped taking it regularly. Afterward she took a long auto journey without symptoms. During the summer she had occasional slight symptoms, which disappeared immediately when she took the medicine. She has been practically free from all hay-fever symptoms ever since beginning to take the drug. She thinks the results are "wonderful." She would probably have taken the drug more regularly if it had not seemed to increase the secretion of urine.

CONCLUSIONS

1. Some hay-fever patients taking not less than 3 gm. of calcium chlorid daily, even for a short time, are practically relieved from all hay-fever symptoms.
2. Calcium chlorid may be taken in doses of 3 gm. daily for an indefinite time without any apparent injury.
3. It is not indispensable in all cases for a hay-fever patient to take calcium chlorid over a long period of time in order to secure relief.
4. Calcium salts may be given, even when the nature of the patient's sensitization is not known.
5. The clinical results from the administration of calcium chlorid in cases of hay-fever are such as to warrant its further trial.

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THE SPLEEN

ITS ASSOCIATION WITH THE LIVER AND ITS RELATION TO CERTAIN CONDITIONS OF THE BLOOD *

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For many years when doing abdominal operations, if it could be done without risk to the patient, it has been my practice to make a careful manual examination of the contents of the abdomen. Thus I have been impressed with the fact that the spleen shows enlargements and other physical changes rather regularly in connection with diseases of the liver and of the blood. In papers on this subject written at various times, attention has been called to the fallacy of the physical examination of the spleen, and it may be said that unless the spleen is sufficiently enlarged to be felt beyond the free border of the costal margin, the enlargement would probably not be recognized. At times careful physical examination by percussion, for instance, has apparently revealed the area of splenic dulness, but on the opening of the abdomen the fact showed how fallacious percussion had been. Faith in these methods has been due to the fact that in certain diseases, like typhoid, which often end in death, the spleen is generally enlarged, and with this knowledge at hand a diagnosis by percussion has been made and proved correct at necropsy. By means of the Roentgen ray, the possibilities of accurately examining the spleen for such enlargements are developing. The roentgenologist has been able to outline the kidneys, the liver, etc., as well as the digestive and thoracic organs, with a marvelous degree of accuracy, and we may expect that he will accomplish the same for the spleen in the near future. The humiliating mistakes made by surgeons, of which we have made our share, of diagnos-

* Read before the Northern Tri-State Medical Association, Toledo, Ohio, Jan. 11, 1916.

ing as splenic enlargement a cancer of the stomach or colon or tumor of the kidney, are now avoidable by careful roentgenographic exclusion of these organs.

SPLEEN AND LIVER

The spleen is closely associated with the liver in function, deriving its blood supply from the celiac axis, the same source as those derivatives of the foregut, the stomach, liver and pancreas, and, like these organs, its vein becomes part of the portal circulation. It is evident that, whatever the function of the spleen, it must send such material as may be culled from the blood to the liver for further elaboration. And, taking experimental and clinical knowledge into consideration, it may be surmised that many of the cirrhoses of the liver may be due to the fact that the liver, the great organ of defense against parasitic and chemical toxic agents, has become unable to care for these products by absorption and elimination, and attempts connective tissue encapsulation in order to render them harmless. In the case of diffuse poisons like alcohol, the liver may become cirrhotic in the attempt to render innocuous deleterious material. We see the close association between the spleen and liver well illustrated in hypertrophies of the spleen attendant on cirrhotic processes of the liver and in secondary cirrhosis of the liver in the Banti stage of the enlarged spleen of splenic anemia.

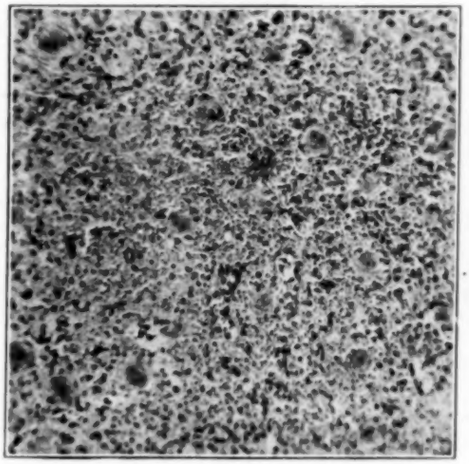

Fig. 1 (Case A 119102). — Microscopic section of syphilitic spleen, showing edge of atypical gumma with giant cells.

Investigation leads to the conclusion that the function of the spleen is not only to remove from the blood bacteria and other toxic agents, but also to conserve the food values of broken-down blood corpuscles, especially red cells, sending their remnants to the liver for elaboration into energy-producing substances. This is shown by the fact that there is increased hematin, and a relative increase of leukocytes, in the splenic vein. These facts bear out the old theory that the spleen is a sieve selecting certain substances — parasitic, toxic and products of degeneration — and being unable to deal with them, passes them on to the liver for conservation. That the liver may adequately maintain this important function, it has been given the power of regeneration. If a large part of the liver of a dog be removed, it will be replaced by new hepatic tissue, while in the kidney and other organs of the body regeneration does not take place to so great an extent, but function is maintained by a hypertrophy of existing tissues.

The function of defense of the liver is shown by Adami,[1] who points out that the leukocytes of the living body pass out on the free mucous surface of the duodenum and upper jejunum, and pick up bacteria which they usually destroy, but should they fail to destroy them, the liver becomes the agent of destruction, and the pigmented areas in the liver are derived from such slaughtered bacteria. Research has shown that the phagocytes of the body are developed in direct response to bacterial invasion. As Vaughan[2] has pointed out, the period of incubation of a disease is the time which is necessary to develop or train leukocytes to bodily defense. He shows that the reaction we call typhoid fever is a defense manifestation, and that preventive serums, such as vaccination for smallpox, typhoid, etc., act to educate the cells of the body to resistance against certain organisms and to change the proteins of the body so that they no longer act as food for these bacteria. Vaughan advances the theory that bacteria are not vegetable organisms but parasitic growths in a distinct class by themselves. Eccles[3] suggests that the phagocytes of the body live on bacteria, and that the food values of the bacteria are thus conserved. He looks on the tonsils and other lymphoid structures, such as the appendix, as what may be called chronic vaccinators, since through the tonsils are constantly permitted to pass a certain number of bacteria which stimulate the development of phagocytes. This shows that a moderate reaction in the tonsil may not always be the cause of an impending generalized infection, but rather an early defense manifestation.

Rosenow[4] has shown that streptococci can be trained to attack special organs. By injecting into the circulation strains of streptococci derived from phlegmonous cholecystitis, he has been able to cause phlegmonous cholecystitis to appear in animals; if they are cultivated on artificial mediums for a time they are prone to produce ulcer of the stomach and appendicitis, whereas if they are passed through animals pancreatitis is usually produced, all of which is evidence of the selective affinity of bacteria and probably other substances for certain tissues or organs.

The spleen is the organ of the body in which the blood stream comes in contact with the pulp, that the process of sifting may be more readily carried out. Must it be understood that all the blood in the body passes through the spleen in a haphazard way to have this function properly performed? Is it not more probable that the spleen has the power of attracting to it certain substances circulating in the blood, as shown by splenic enlargements of typhoid, malaria, etc.?

It is interesting to note how the spleen is controlled in its function. Stimulation and control is exerted over the voluntary parts of the body by the cerebrospinal nervous system, over the involuntary or vegetative part of the body by the sympathetic ganglion acted on the internal secretions. In addition, there is the essential rhythm of nonstriated muscle. The vegetative part of the body was well developed before the organism had reached the stage of a cerebrospinal nervous system, a comparatively late development. The sympathetic nervous system, probably

1. Adami, J. G.: On Latent Infection and Subinfection and on the Etiology of Hemachromatosis and Pernicious Anemia, THE JOURNAL A. M. A., Dec. 16, 1899, p. 1509; Dec. 23, 1899, p. 1572.

2. Vaughan, V. C.: Infection and Immunity, Commemoration Volume, Chicago, American Medical Association, 1915, p. 1.

3. Eccles, R. G.: The Tonsils and the Struggle for Existence, Med. Rec., New York, 1915, lxxxviii, 47.

4. Rosenow, E. C.: Elective Localization of Streptococci, THE JOURNAL A. M. A., Nov. 13, 1915, p. 1687.

mesoblastic in origin and now closely associated with the cerebrospinal nervous system, acts in association with the internal secretions, and all organs of important internal secretion, such as the suprarenals and the hypophysis, in which gland and sympathetic ganglia are present, are so closely associated as to form a single organ.

That the spleen does not have an important internal secretion is shown by the fact that its removal does not deprive the body of any important constituent; and that it is not under the complete control of the nervous system is shown by its extremely scanty supply from Auerbach's plexus. But the spleen does have a considerable amount of nonstriated muscle fiber, and it is altogether probable that this muscle has an important function and possibly is responsible for the digestive rhythmic change in the size of the spleen.

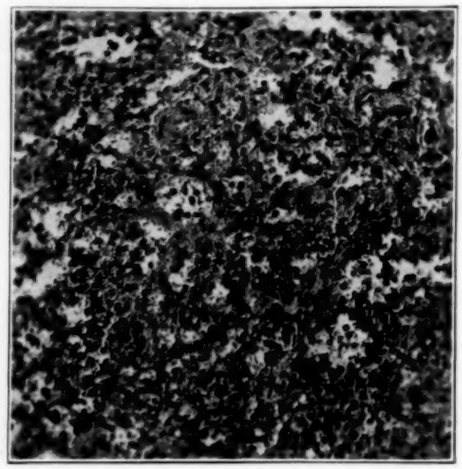

Fig. 2 (Case A 131884). — Microscopic section of spleen in a case of so-called Hanot's jaundice. Section shows marked fibrosis with increase of pulp and lymphoid cells.

All the nonstriated muscle of the body, for example, the musculature of the alimentary tract, of the bladder, ureter, uterus, etc., has the power of rhythmic contraction the same as the heart. A small bit of intestine put in Locke's solution will beat for hours. The sino-auricular node of the heart gathers the impulses from the primary contractions of the muscle fibers of the auricle and is the pacemaker of the heart; the impulse passes from the sino-auricular node to the ventricle through the bundle of His, timing the ventricular beat, and this curious association of the many branched nodal cell of Keith[5] with the nonstriated muscle occurs in different areas over the entire digestive and genito-urinary tracts (Keith,[5] Cannon[6] and Alvarez[7]).

According to Keith, nodal tissue occurs in definite amounts in at least seven gastro-intestinal situations. First, about the cardia, controlling the rhythmic contractions of the stomach and the emptying of the esophagus: it is entirely probable that the so-called idiopathic dilatation of the esophagus, or cardiospasm, is the result of failure of nodal control. The same tissue found about the pylorus in disease causes pylorospasm. A sphincter exists just below the common duct in certain of the lower animals, and Ochsner[8] has shown that remnants of this muscle are to be found in man. Along this portion of the duodenum nodal tissue is to be found, which may explain the occasional case of acute dilatation of the stomach and upper duodenum which has masqueraded as true mechanical gastro-mesenteric ileus.

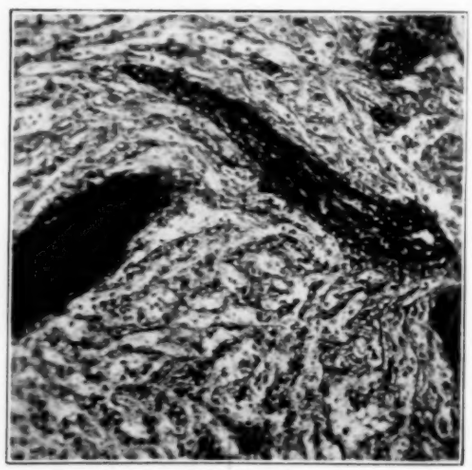

Fig. 3 (Case A 20818). — Microscopic section of spleen in a case of advanced splenic anemia with Banti's syndrome. Section shows connective tissue greatly increased with endothelium of venous sinuses swollen.

Nodal tissue is found about the ileocecal orifice. Keith believes that this has to do with ileal stasis and lies behind those important phenomena which Lane[9] has described. Nodal tissue is found in the ascending colon, a situation in which, in many of the lower animals, there exists a true colic sphincter, and this may have some relation to cecal stasis and the gastrocolic reflexes described by Hertz.[10] Again, this tissue is found about the rectosigmoid, and a failure of control may be the cause of giant colon or Hirschsprung's disease.

According to Starling and Bayliss[11] the intestinal tract has two rhythms, the first acting from ten to twenty times to the minute, which Mall[12] suggests may be the heart of the portal circulation forcing the blood in the radicles of the portal veins to the liver, and the second, acting once or twice to the minute and which we recognize as the peristaltic wave.

To go further into the interesting phase of a subject to which Keith has called attention would lead us far afield. Suffice to say that the rhythmic waves are automatically checked by sphincters, and in failure of rhythmic intestinal movement and sphincter control may lie the secret of so-called intestinal intoxication and neurasthenias of intestinal origin. The presence of nonstriated muscle in the spleen gives important evidence of the primary relationship of the spleen to the digestive system.

RELATION TO THE BLOOD

The relation of the spleen to the blood has long been known. The spleen, the liver, and the adenoid and lymphoid structures of the body in the fetus are blood-producing organs. All red-blooded animals possess a spleen. The earliest blood cell is white, a lymphatic descendant of the mesenchyma cell. Leukemia is a reversion of all these structures to the primitive condition of the production of embryonic

5. Keith, A.: A New Theory of the Causation of Enterostasis, Cavendish Lecture, Lancet, London, 1915, ii, 371.
6. Cannon, W. B.: The Importance of Tonus for the Movements of the Alimentary Canal, Arch. Int. Med., October, 1911, p. 417.
7. Alvarez, W. C.: Functional Variations in Contractions of Different Parts of the Small Intestine, Am. Jour. Physiol., 1914, xxxv, 177; Further Studies on Intestinal Rhythm, Am. Jour. Physiol., 1915, xxxvii, 266.
8. Ochsner, A. J.: Constriction of the Duodenum below the Entrance of the Common Duct, and Its Relation to Disease, Tr. Am. Surg. Assn., 1905, xxiii, 314.
9. Lane, W. A.: The Kink of the Ileum in Chronic Intestinal Stasis, London, Nisbet, 1910; The First and Last Kink in Chronic Intestinal Stasis, Lancet, London, 1911, ii, 1540; A Clinical Lecture on Chronic Intestinal Stasis, Brit. Med. Jour., 1912, i, 989.
10. Hertz, A. F.: The Ileo-Caecal Sphincter, Jour. Physiol., 1913, xlvii, 54. Hertz, A. F., and Newton, A.: The Normal Movements of the Colon in Man, Jour. Physiol., 1913, xlviii, 57.
11. Bayliss, W. M., and Starling, E. H.: The Movements and Innervation of the Small Intestine, Jour. Physiol., 1900-1901, xxvi, 127.
12. Mall, F.: A Study of the Intestinal Contraction, Johns Hopkins Hosp. Rep., 1896, i, 37.

white cells, and bears the same relation that the uncalled-for production of embryonic epithelial and connective tissue cells bear to carcinoma and sarcoma. At birth the spleen loses its power to produce red cells, except on extraordinary occasions following hemorrhage (Osler[13]), but continues to produce a certain number of white cells.

The blood pictures of the various anemias are often reproductions of the normal blood of lower animals in which a shorter heredity has given less fixed characteristics than in man. The spleen seems to become the graveyard of wornout corpuscles, especially of red cells. However, it probably does not act on its own initiative, but as though the red cells were sensitized some other place in the body and destroyed in the spleen. This is shown by the increased fragility of the red cells of Chauffard[14] and Widal,[15] which occurs in hemolytic jaundice. The enlarged spleen of splenic anemia, hemolytic jaundice, and possibly the primary anemias may be a work hypertrophy. In all but one patient with pernicious anemia operated on in our clinic, the spleen on removal has been found to be definitely enlarged. Taking the average weight of the spleen to be 195 gm. (Sappey[16]), the spleens removed by us for pernicious anemia have weighed from 360 to 910 gm., except the one mentioned, which was underweight. It would appear that the excess of splenic tissue produces a hypersplenism, as suggested by Eppinger,[17] and unnecessary destruction of red cells.

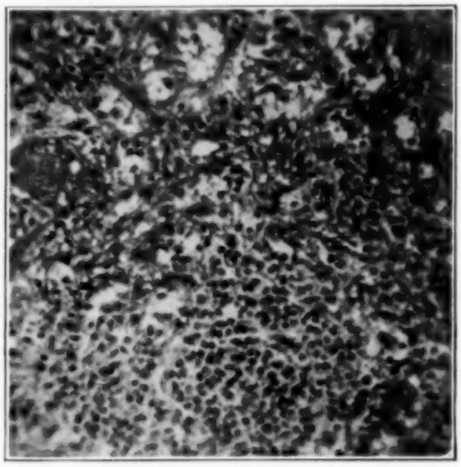

Fig. 4 (Case A 137566). — Microscopic section of spleen in a case of early splenic anemia in a child. Section shows lymphoid hypertrophy with moderate diffuse fibrosis.

Just as there may be many exciting causes for exophthalmic goiter, so there may be many exciting causes of enlarged spleen. The splenomegaly sometimes found in patients with syphilis and usually associated with syphilis of the liver apparently has a definite causal relationship to the chronic anemia of the secondary type which is present. This anemia has promptly been relieved by removal of the spleen in a few cases on record and in three patients of our own. The spirochetal action on splenic tissue in these instances results almost always in a chronic fibrosis and only rarely in gummas. On the other hand, gummas of the liver are quite common (Fig. 1).

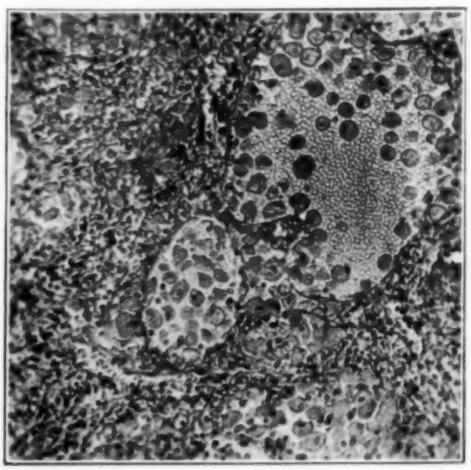

Fig. 5 (Case A 8869). — Microscopic section of spleen in a case of Gaucher's disease. Section shows venous sinuses more or less filled with desquamated hydropic reticulo-endothelium.

Wilson[18] is now at work on our pathologic material, and is able to show that there are microscopic differences (Figs. 1 to 7) which it is hoped may prove of differential value in the various splenic enlargements, and which may give us a clue to the reason why the removal of the spleen cures or is of the greatest possible benefit in a number of different conditions of the liver and blood heretofore fatal. This suggests that the spleen, an organ not necessary to life, and not causing disease on its own initiative, is the one link in an otherwise fatal chain which can be easily and safely broken. With this assumption the idea that the spleen is an obsolete organ falls, just as has been the case with the tonsil and possibly with the appendix. The enormous blood supply shows the opposite of the vascular conditions of obsolete organs, in which there is always a reduced blood supply. As the removal of the tonsil may prevent generalized infections responsible for all sorts of acute and chronic conditions, the tonsil itself not being essential to life, so splenectomy may cure certain disease conditions of the nutritive system, especially those of the liver and of the blood.

I should apologize for this lengthy preamble which, however, all too briefly outlines certain facts and near facts in splenic physiology and pathology; yet there is a value in getting far enough back to secure a good perspective, to see the whole picture, rather than be lost in some particular detail.

ENLARGEMENTS OF THE SPLEEN

These may be divided into four groups: (1) new growths, (2) infections, (3) enlargements associated with hepatic disease, and (4) those associated with the blood.

1. *New Growths.*—The first will not be considered at this time. I shall very briefly take up the results of splenectomy in some of the diseases in the latter three groups.

2. *Infections.* — In so-called primary tuberculosis of the spleen the removal of the organ has cured a few patients. It is quite likely, however, that tuberculosis is practically never, in reality, primary in the spleen, and that this diagnosis is the result of insufficient clinical study. Our one patient of this type died from general miliary tuberculosis after a temporary improvement of several months. In three instances we

13. Osler, W.: Principles and Practice of Medicine, New York, D. Appleton & Co., 1912.

14. Chauffard, A.: Pathogénie de l'ictère congénital de l'adulte, Sem. méd., 1907, No. 3, p. 25; Les ictères hémolytiques, ibid., January, 1908; Cholélithiase pigmentaire dans un cas d'ictère congénital hémolytique; analyse chemique des calculs, Bull. et mém. Soc. mé. d. hôp. de Paris, 1912, xxxiv, 80, cited by Elliott and Kanavel: Surg., Gynec. and Obst., 1915, xxi, 21.

15. Widal, A., and Brulé: Differenciation de plusieurs types d'ictères hémolytiques, Presse méd., 1907, p. 641, cited by Elliott and Kanavel (Footnote 14).

16. Sappey, cited by Piersol, G. A.: Human Anatomy, Philadelphia, J. B. Lippincott Company, 1913, p. 1781.

17. Eppinger, H.: Zur Pathologie der Milzfunktion, Berl. klin. Wchnschr., 1913, L, 1509, 1572, 2409.

18. Wilson, L. B.: The Pathology of Splenomegaly, Surg., Gynec. and Obst., 1913, xvi, 240; Pathology of Spleens Removed for Certain Abnormal Conditions of the Blood, Ann. Surg., 1915, lxii, 158.

have removed greatly hypertrophied spleens from patients suffering with chronic syphilis and marked anemia. In one of these, specific treatment had been carried out for two years, in another for six months, without satisfactory improvement in the general condition or the anemia. Following splenectomy, there was marvelous improvement of the anemia in all of them.

Marked enlargement of the spleen is quite frequently present in patients with a history of chronic recurring septic conditions. These spleens are usually smaller than those of splenic anemia, although occasionally we have seen a very large spleen filled with infarcts. We have removed the spleen from seven patients with histories of chronic recurring sepsis. Patients of this type usually have a lowered resistance, and cardiorenal insufficiency is most likely to influence the ultimate prognosis unfavorably.

3. *Splenic Enlargements Associated with Hepatic Disease.*—Primary cirrhosis of the liver accompanied by enlargement of the spleen is remarkably similar to primary enlargement of the spleen with secondary cirrhosis of the liver, and in the late stages of either disease it is very difficult to determine in a given case whether the process was primary in the liver or in the spleen. In the same way it is difficult to differentiate between hypertrophic biliary cirrhosis of the liver of the Hanot type in which there is jaundice, and hematogenous jaundice, which has its origin in the spleen. Primary biliary cirrhosis of the Hanot type is doubtless a rare disease. It may last for from six to ten years, and the spleen as well as the liver is always enlarged. It is a disease of young adult life. As in hemolytic jaundice, there are crises marked by tenderness in the region of the liver and spleen with a temporary increase of jaundice. In a small number of instances in which Hanot's cirrhosis has been diagnosed, the spleen has been removed with undoubted benefit, and possible cure. We have seen one such case. Hemolytic jaundice can usually be differentiated by the fact that the fragility of the red cells in the peripheral circulation is decreased, whereas in cirrhosis of the liver the resistance of the red cells is usually increased. In hemolytic jaundice urobilin, but not bile, is present in the urine, and the jaundice is not associated with itching. Yet to what extent these cases of biliary cirrhosis have been confused with those of hematogenous jaundice of splenic origin, and to what extent the syndrome which has been called Hanot's cirrhosis of the liver actually exists, further investigation must decide.

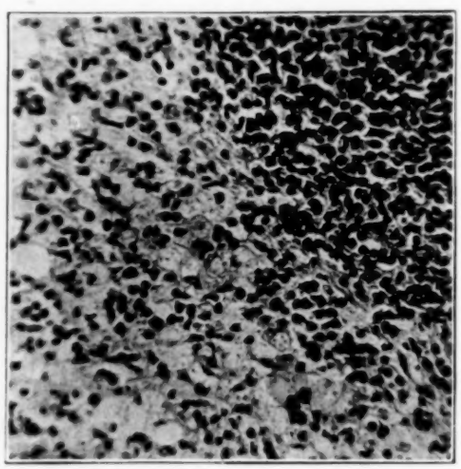

Fig. 6 (Case A 86218). — Microscopic section of spleen in a case of hemolytic jaundice. Section shows sharp demarcation of increased lymphoid tissue by overgrowth of reticulum.

In four instances we have removed a greatly enlarged spleen in patients suffering from portal cirrhosis of the liver. It is too early to know whether or not the end-results will justify the operation. Three of our patients, however, have markedly improved, and the ascites and anemia have disappeared.

It must be evident to all that the spleen is only one avenue by which noxious agents may reach the liver and cause a cirrhosis. It is probable that a large number of cirrhoses have their origin in the gastro-intestinal tract, but, no matter what the portal of entry may be, there is usually a concomitant enlargement of the spleen.

In general, the common forms of cirrhosis of the liver may be divided into three classes: first, portal cirrhosis, in which the toxic material obtains entrance through the portal system and the connective tissue proliferation advances from the portal spaces and in which the symptoms are those of portal obstruction; second, biliary cirrhosis, in which the infectious agent may be either ascending from the biliary tract or hematogenous, and in which the most pronounced clinical sign is chronic jaundice, while portal obstruction comes on late; third, mixed types, which are undoubtedly not rare and in which a preoperative diagnosis is often impossible[19] (Fig. 2).

4. *The Blood.*—Splenic Anemia: Patients with anemias associated with enlargements of the spleen are cured or greatly benefited by splenectomy. The syndrome called splenic anemia, the terminal stage of which is known as Banti's disease, may be cured by removal of the spleen in a high percentage of cases (Fig. 3).

Clinically, splenic anemia is an entity. The spleen is large; there is a definite anemia showing a reduction of reds and a low hemoglobin, and the disease is progressive, ending in death. The process may be exceedingly slow and at times completely interrupted in its clinical symptoms for several years; but all enlargements of the spleen that cannot be shown to have some other definite cause must be looked on as incipient splenic anemia. The future history of such cases will finally prove the large majority of them to be of this character. Hemorrhage from the stomach at times is one of the early symptoms, even before the spleen is much enlarged. These cases of gastric hemorrhage in which no other origin can be found should be carefully examined for evidence of splenic anemia. In the later stages, after ascites has developed, and the liver has become cirrhosed, but little may be expected from the removal of the spleen, and yet several of our patients in this terminal condition have been cured by splenectomy (Fig. 4).

Splenic anemia with adult characteristics is not infrequently seen in childhood, and is promptly relieved by splenectomy. It is quite probable that the pseudoleukemic anemia of von Jaksch is merely the infantile type of splenic anemia, the increased leukocytes (30,000 or more) being merely a difference in the reaction of the blood due to infancy (Giffin). It may be said in this connection that while leukopenia is usually present in splenic anemia, there are a number of instances in which patients having a moderate leuko-

19. Giffin has been very much interested in hepatic cirrhosis in connection with splenic enlargement. I am indebted to him for the clear statement of the present view of these conditions. (Giffin, H. Z.: Splenectomy for Splenic Anemia in Childhood and the Splenic Anemia of Infancy, Ann. Surg., 1915, lxii, 679; Splenectomy in the Treatment of Splenomegalia, Associated with Syphilis, Am. Jour. Med. Sc., to be published.)

cytosis (20,000 or more) have been operated on at various ages and remained well afterward. Several such patients operated on by us were previously diagnosed as having true leukemia, and were treated for it.

With the splenic anemias may be classified Gaucher's disease, which is shown by Brill and Mandelbaum[20] to appear before the thirteenth year and average twenty-five years of duration, and the patient usually dies from some complication. The spleen may become of enormous size. In the terminal stages of Gaucher's disease or large cell splenomegalia, endothelial growths of the same character are found in the liver, lymphatics, etc. Our experience in the removal of the spleen in three cases of this kind has shown that in the earlier stages the condition is cured by splenectomy (Fig. 5).

One of the most interesting anemias of splenic origin is the so-called hemolytic jaundice, a disease of the young, accompanied by acholuric jaundice, that is, there is no evidence of biliary obstruction, bile is present in the stools and there is no itching. There are two types of this disease, one the familial type of Minkowski,[21] which often affects several members of the same family and is less severe in its manifestations, many patients living out a life expectancy. The other is the acquired type of Hayem[22] and Widal,[15] which comes on during puberty or adolescence and usually ends in death. In hemolytic jaundice the patient suffers from crises accompanied by tenderness over the liver and spleen, an increase of temperature and quickness of pulse. We have done nine splenectomies for hemolytic jaundice. No other operation I know of gives more brilliant and striking results. Within twenty-four hours the jaundice begins to disappear, and in a few days the patients perhaps for the first time have clear complexions; the anemia is rapidly overcome and they remain well (Fig. 6).

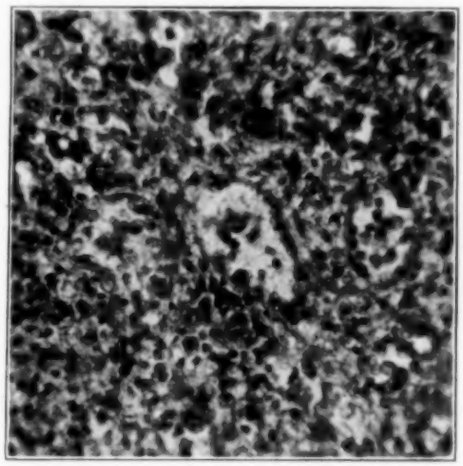

Fig. 7 (Case A 128367). — Microscopic section of spleen in a case of early pernicious anemia. Specimen shows a marked lymphocytosis and some hypertrophy of the endothelium of the sinuses.

Pernicious Anemia: Eppinger first called attention to the remarkable improvement of the patient after removal of the spleen in pernicious anemia. Although sufficient time has not elapsed to say that these patients are permanently cured, as Cabot[23] has said, no other means of therapy has so promptly brought about an improvement in the condition of the patient and so definitely relieved the anemia. It is true that in the late stages when there are spinal cord changes these changes do not disappear, although the condition is marvelously improved, nor do all the characteristic cells of pernicious anemia disappear from the blood. But from our experience with nineteen patients, I feel justified in performing splenectomy in selected cases of pernicious anemia, and have at least the hope that if it is done sufficiently early in the course of the disease, it will permanently check if not cure the condition (Fig. 7).

Preliminary to splenectomy and, in some cases, following it, transfusion of blood may be necessary. The blood of the donor should always be tested in connection with the recipient for agglutination and hemolysis.

20. Brill, N. E., and Mandelbaum, F. S.: Large-Cell Splenomegaly (Gaucher's Disease): A Clinical and Pathological Study, Am. Jour. Med. Sc., 1913, cxlvi, 863.

21. Minkowski, O.: Ueber eine Hereditäre, unter dem Bilde eines chronischen Icterus mit Urobilinurie, Splenomegalie und Nierensiderosis verlaufenden Affection, Verhandl. d. Kong. f. inn. Med., 1900, xviii, 316.

22. Hayem, G.: Sur un variété particulière d'ictère chronique, ictère infectieux chronique spléno-mégalique, Presse méd., 1898, i, 121; Nouvelle contribution à l'étude de l'ictère infectieux chronique spléno-mégalique, Bull. et mém. Soc. méd. d. hôp. de Paris, 1908, Series 3, xxv, 122.

23. Cabot, R. C.: Discussion on Blood and Blood Diseases, abstr., THE JOURNAL A. M. A., June 26, 1915, p. 2164.

CAUTERIZATION AND FULGURATION OF BLADDER TUMORS

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AND
WILLIAM NEILL, M.D.
BALTIMORE

The past ten years have witnessed a remarkable and beneficent change in the treatment of benign neoplasms of the bladder. Fulguration has become by common consent the method of choice for all cases in which it can be applied. The credit for this remarkable advance in vesical surgery lies at the door of Dr. Edwin Beer,[1] who has made this new field peculiarly his own, both by discovery and by development.

Beer's pioneer work has thus wrought a most welcome transformation in what was previously often a perplexing situation. He has reduced the complex to the category of the simple, always a notable surgical achievement, so that now instead of putting these patients to bed and exposing them to the risks and discomforts of an operation, we treat them as ambulatory office patients and destroy the growth often in from one to several sittings.

In cases of recurrence the greatest benefits of the new plan are realized, for here the patient continues the treatment at intervals and without discomfort, until the entire trouble is finally eradicated to return no more. Under former conditions a recurrence simply meant an outlook for another operation and a siege in the hospital.

Here are two illustrative cases from personal experiences:

CASE 1 (Hosp. No. 5480).—Miss M. G., aged 41, had been operated on twice before for papilloma of the bladder, the first time by Dr. Harris of Battle Creek, Sept. 26, 1911, and again for a recurrence by another operator, Aug. 28, 1912, the suprapubic route being taken both times. Six months later she was examined by two surgeons in Brooklyn, and a return of the trouble was found. Both surgeons advised the use of the high frequency current. Treatment by Roentgen

1. Beer, Edwin: Removal of Neoplasms of the Urinary Bladder, THE JOURNAL A. M. A., May 28, 1910, p. 1768; The Treatment of Papillary Tumors of the Urinary Bladder with the High Frequency Current (Oudin), ibid., Nov. 16, 1912, p. 1785; Ann. Surg., August, 1911; Treatment of Benign Papillomata of the Urinary Bladder with High Frequency Current, Ann. Surg., June, 1915, lxi, 109; ibid., lxii, 496; Treatment of Benign Papillomata of the Urinary Bladder with the Oudin High Frequency Current Introduced through a Catheterizing Cystoscope, Med. Rec., New York, Feb. 8, 1913.

ray had also been used. When first seen by Dr. Kelly she was examined through the open cystoscope, May 29, 1914, and the following condition noted:

Along the posterior wall half way from the vertex to the base of the bladder was a transverse area of ulceration, 26 mm. broad. A similar area was seen in the vertex, 18 mm. in diameter; directly opposite the internal ureteral orifice on the posterior wall was a papillomatous growth, 1 cm. in

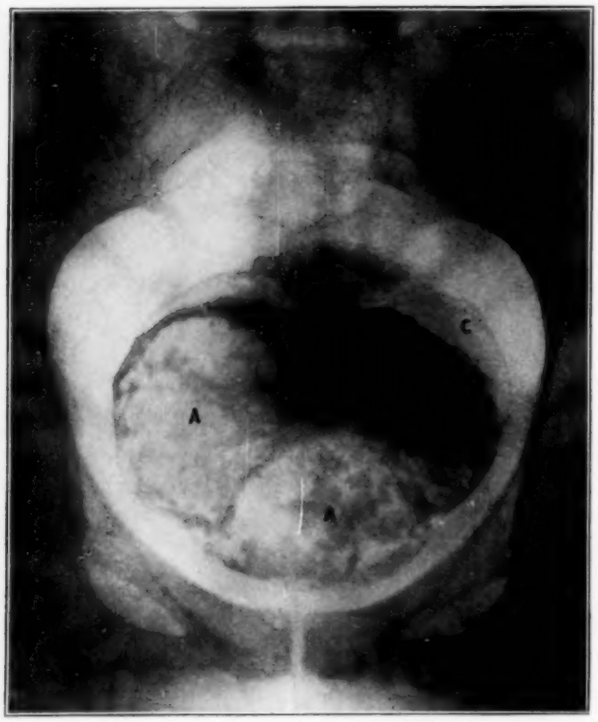

Fig. 1.—Bladder in Case 2: *A*, conglomerate mass of large growths; *B*, injected bismuth in suspension; *C*, zone of urine, water and air with the bladder wall in the periphery.

diameter. A similar one grew just to the left of this, from 6 to 8 mm. in diameter. These growths were fulgurated through the open cystoscope. Since that date the patient has returned to the hospital at intervals of from one to two months, and numerous small tumors have been detected sprouting in various locations and treated by fulguration. The treatments were given May 29, June 29, Aug. 17, Sept. 28 and Dec. 24, 1914, and Jan. 7, Jan. 28, Feb. 18, April 2, June 4, June 18, Aug. 5, Sept. 3 and Dec. 17, 1915.

When last treated, Dec. 17, 1915, the bladder was found to be entirely normal except for two small superficial spots about 4 and 2 mm. in diameter above the right ureteral orifice. These were fulgurated for a few seconds, and the patient was told to return in several months for another examination.

This patient is a monument to fulguration, for she never could have survived the numerous operations she would have needed to remove all these recurring growths.

Let us here note an exception to this desideratum of treating all cases by fulguration. When the tumors are massive and there are numerous implantations, it is often preferable to make a suprapubic section and extirpate all visible disease, and then to follow up the case by fulguration if there is any recurrence. Here is a case in point:

CASE 2 (Hosp. No. 4079).—Miss B., aged 38, first seen May 8, 1912, complained of passing blood in the urine for eight years. An aeroscopic examination through a Kelly cystoscope showed a large papillomatous tumor attached to the anterior wall of the bladder and seemingly filling it. An examination by Roentgen ray with a moderate bismuth injection of the bladder was made (Fig. 1). Here we have an astonishing picture: the area *A* represents a conglomerate mass of large growths and shows beautifully their papillomatous nature. About the tumor lies the dark zone *B*, which represents the injected bismuth in suspension. Around this the gray area *C* is the zone of the urine, water and air with the bladder wall in the periphery.

Dr. Kelly operated in May, 1912, through a suprapubic incision. A small growth, 1.5 cm. in diameter, was found attached to the posterior wall; three large cauliflower growths the size of hen's eggs lay on the anterior wall of the bladder; one of them grew from the trigonum beneath the urethra and between it and the left ureteral orifice, and then encircled and extended down the urethra a short distance; another lay on the anterior wall above the ureteral orifice. These were removed; in all, nine tumors being taken out. The patient made an uneventful recovery and was discharged June 15, 1912, and remained well and free from all her old symptoms until March 6, 1914, when she had vesical pain, and bleeding on one occasion. An aeroscopic examination, April 6, 1914, showed a recurrence the size of a cherry near the left ureteral orifice; this was fulgurated, and there has been no return of symptoms to date.

There is a borderline between cases which are manifestly best for fulguration, and this small group which we are still inclined to reserve for surgery, where surgeons will discuss their choice of method, one operating, while another prefers the high frequency current; but there is, we believe, a group of massive tumors at present beyond the border where operation is best in competent surgical hands.

We believe that the open aerocystoscope (Kelly's), presents incontestible advantages for seeing these growths, and determining their number and relations, and above all in most cases in enabling the surgeon to see and to handle the pedicle.

A growth which appears sessile and malignant by the water cystoscope may thus be found by the air cystoscope to be pedunculate. We believe that the facility

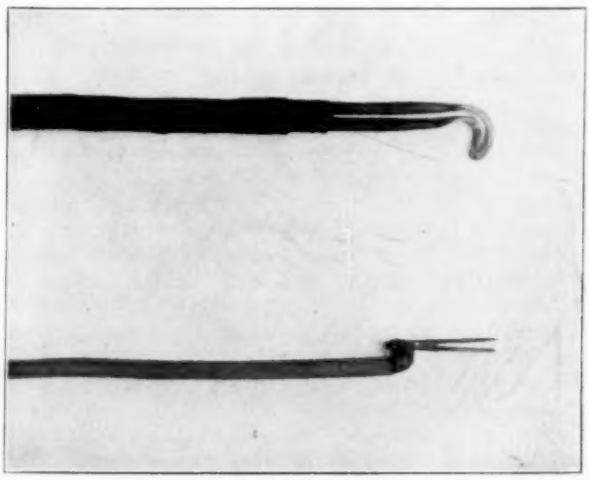

Fig. 2.—Cautery knife and two point fulgurator, natural size.

of exposure and treatment through the open cystoscope (Nos. 10 to 12) enables one also greatly to shorten the period of treatment in attacking the pedicle, rather than the peripheral parts which are more accessible. The difference in methods is sometimes comparable to the difference, on the one hand, in taking down a tree by lopping off its branches one by one in the effort to reach the trunk, and on the other of cutting off the

trunk at once near the roots. *We therefore in all cases proceed at once to attack the pedicle and to fulgurate as deeply as possible into its substance.* Even large tumors can be handled by fulguration if the pedicle can be reached, and in this way the many sittings are cut down to only a few.

We have found that two slightly diverging needles (Fig. 2) are valuable for fulguration. They are plunged into the substance of the pedicle and the current turned on as strong as the patient can stand it. The pedicle becomes blanched and a large area of necrosis is established, with a correspondingly wide area of consecutive destruction in the periphery. Slender pedicles wither at once, and small sessile growths are eradicated in a few seconds.

By the open cystoscope we are also able to use in an admirable manner and with great effect platinum cautery knives, formerly so much used in throat work to burn and destroy new growths. We figure one here devised to take the place of the plain cautery knife (Fig. 2). This knife, which is sickle-shaped, is hooked around the pedicle, when the cautery current is turned on, heating the blade to a cherry red. By drawing the blade toward the cystoscope the pedicle is cooked or burned through and cut off gradually in part or in whole, as seems best.

1418 Eutaw Place.

PRECORDIAL PAINS OF CARDIOVASCULAR AND EXTRACARDIAC ORIGIN

CLINICAL VARIETIES, ETIOLOGY AND THERAPY *

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NEW YORK

As early as 1772, Heberden described angina pectoris. Nothnagel[1] ascribed it to spasm of the coronaries, with consequent local ischemic and nutritive changes in the musculature, a theory which has profoundly affected the literature of the subject. Huchard[2] divided angina pectoris into true and false: that produced by effort he called true, that without effort, false angina. Mackenzie[3] ascribed the fundamental cause of cardiac pains, a term which he prefers to angina, to exhaustion of the cardiac musculature. Osler[4] described four types of angina pectoris: the reflex, neurasthenic, hysterical and the Nothnagel.

The frequent indiscriminate use of such terms as "false angina pectoris," "angina sine dolore," "angina vasomotoria," "angina vera," etc., with no clear sense of their etiology or pathology, has added to the difficulty of comprehending the fundamental causes of precordial pains. This symptomatic and pathologic confusion, and the fact that precordial pains of similar distribution and character may be caused both by intracardiac and extracardiac disease, have stimulated me to make a careful study of those patients in whom these pains, from whatever cause, were the only or the most prominent symptoms. In every case a very careful history, the importance of which is often overlooked, was obtained. Besides the routine, the clinical examination often included phenolsulphonephthalein and sodium chlorid excretion tests, and electrocardiographic and orthodiascopic tracings. The type, character, intensity and distribution of the pain, the time of its appearance, its correlation with exercise, with digestive or other disturbances, and the presence or absence of Head's zones were noted. After study of all data, an attempt was made to discover the probable fundamental etiologic lesion in the cardiovascular system (the myocardium, endocardium, kidneys or arteries), or in a distant organ (usually the gastrointestinal canal), and to gage the extent and severity of the pathologic damage to be therapeutically attacked. In this manner, besides obtaining a rational view of the entire subject, one could fairly definitely pick out and group patients in whom therapy would be of no avail, as well as those in whom it perhaps offered good chances for relief and even symptomatic cure.

Studies of the cardiovascular nerve supply have shown that there are rich ganglionic and nerve plexuses which surround the heart and the root of the aorta[5] and are formed by branches of the vagus and sympathetic. There are also ganglionic cells and nerve fibrils in the sino-auricular node,[6] the auriculoventricular bundle[7] and throughout the cardiac musculature.[8] So far as known, nerves of sensation are absent. Through the fundamental work of Sherrington,[9] Head[10] and later of Mackenzie,[11] it is known that a viscus, though not possessed of nerves of sensibility, may, when irritated, excite the corresponding visceral segment of the spinal cord; the latter then sends abnormal centrifugal impulses to the muscles, glands, etc., which in the skin give rise to morbid sensations usually felt and denoted as pains. In cardiac disease, the area ordinarily affected is the precordium; depending on the nerves involved, the intensity of the irritation, or possibly on the irradiation of the centripetal impulse to other spinal segments, the pain may spread to the entire chest, to both arms (especially the left), the fingers, neck, head, the interscapular region, the epigastrium, the abdomen and even the thighs. Besides the precordium and left shoulder, the epigastrium is the favorite site for referred pains, a fact which often causes erroneous diagnoses, and mistakenly directs the therapy to the stomach. In severe cases, the pain is usually sharp, lancinating and agonizing in character, and is combined with the oft described feeling of impending death. In milder cases, it may be dull or aching or there may be a feeling of oppression on the chest. Head's zones are sometimes present, usually over the precordium, more rarely in the epigastrium. Occasionally the pressure even of wearing apparel produces severe pain. The sensitiveness may be confined to the underlying intercostal muscles; deep pressure alone then elicits pain. It is sometimes possible in a general way to judge of the effect of therapy and the progress of the disease by the amount of pain produced on superficial or deep pressure.

In this connection it is important to discuss the frequency of epigastric pains and occasional epigastric Head's zones found in heart disease. These are usually ascribed to an enlarged liver or to congested gastric mucous membrane. However, the pains are

* Read before the Bronx County Medical Society, Feb. 16, 1916, and in part before the New York County Medical Society, Nov. 22, 1915.

1. Nothnagel: Deutsch. Arch. f. klin. Med., 1867, v, 3.
2. Huchard: Diseases of the Heart, 1910, p. 50.
3. Mackenzie: Diseases of the Heart, 1913, p. 72.
4. Osler and McCrae: System of Medicine, iv, 449.
5. Manouélian: Ann. de l'Inst. Pasteur, June, 1914.
6. Oppenheimer, B. S., and Oppenheimer, A.: Jour. Exper. Med., 1912, xvi, 613.
7. Wilson: Proc. Roy. Soc., 1909, lxxxi, Series B.
8. Kent: Brit. Med. Jour., July 18, 1914.
9. Sherrington: Integrative Action of the Nervous System.
10. Head: Sensebilitaetsstoerungen der Haut, etc., 1898.
11. Mackenzie: Symptoms and Their Interpretations.

present when the liver is not enlarged, and necropsy reports show that such patients often had no congestion or disease of the gastric mucosa. Besides, we possess no data which definitely correlate such presumed congestion with pain. From clinical manifestations, from disappearance of epigastric tenderness *pari passu* with decompensation, and from the intimate correlation of the nerve supply of stomach and heart, it seems probable that this type of pain is chiefly, if not entirely, the result of referred nerve excitation from cardiac disease.

Clinically and etiologically, precordial pain is divided into that due to *intracardiac* and *extracardiac* disease. This distinction is at times difficult or even impossible, but the attempt at differentiation is of fundamental importance. For the purpose of clinical classification, the term "myocardial insufficiency" is here used as equivalent to cardiac failure or incompetency.

COMMONER CAUSES OF PRECORDIAL PAIN

The subject will be discussed according to this outline:

A. Organic cardiovascular disease:
   1. (*a*) Hypertensive cardiovascular disease with myocardial insufficiency. (*b*) Hypertension and myocardial insufficiency with labile vasomotor mechanism. (*c*) Uremic group.
   2. Myocardial insufficiency without hypertension.
   3. Acute rheumatic endocarditis and rheumatic endocarditic exacerbations.
   4. Endomyocardial disease with general circulatory failure.
   5. Embolic infarcts in the main coronaries and their branches.
   6. Cardiac syphilis.
   7. Premature arteriosclerosis and cardiosclerosis.
   8. Senile arteriosclerosis and cardiosclerosis.
   9. Sacculated aneurysm.
   10. Tabagism (?)

B. Extracardiac disease:
   1. Gastro-intestinal disease (organic and functional).
   2. Esophageal disease (organic and functional).
   3. Crises of catarrhal pulmonary affections.
   4. Vasomotor disturbances at the menopause.
   5. Neuralgias (?) of unknown origin.
   6. New growths and disease of the mediastinum, spinal cord and bony structures of the chest; intercostal myalgia and neuralgia; pericarditis.

A. PRECORDIAL PAINS DUE TO ORGANIC CARDIOVASCULAR DISEASE

1. (*a*) *Hypertensive Cardiovascular Disease with Myocardial Insufficiency.*—The patients of this group are probably the most frequent sufferers from precordial pains. The cause of hypertension has been ascribed by some to an increase of epinephrin in the blood, though careful experiments by Janeway and Park[12] have not justified this assumption. Recent studies of blood metabolism have shown that chronic nephritis with hypertension[13] is often accompanied by an abnormal amount of nonprotein nitrogen in the blood, and by a diminution of blood alkalinity, and hence comparative acidosis,[14] facts which may in the future offer promising fields for therapeutic attack. The chief cardiac changes are ventricular hypertrophy, usually left but sometimes right, patchy, fibrous myocarditis, thickened aortal and mitral cusps, lime deposits on the first portion of the aorta, and atheroma and thickening of both coronaries. It must be remembered, however, that patients with similarly diseased hearts may have little or no precordial distress.

A brief case description will serve to fix the type: a systolic blood pressure of about 190 mm.; a rough systolic first and a sharply accentuated and bell-like second sound at the right base; evidence of marked left ventricular hypertrophy with a heaving apical impulse; urine with or without albumin or casts; very slight pretibial edema; dyspnea on exertion or coming suddenly at night; nycturia. The pains are usually dull, most marked in the precordium and radiate to the neck and arms. Almost frantic therapeutic efforts are made as a rule to reduce the high blood pressure, while the fact that the latter is often a *conservative, compensatory process* seems to be entirely ignored.

A mere enumeration of the long list of remedies is sufficient proof of their inadequacy. Vasodilators (nitroglycerin, amyl nitrite, sodium nitrite, erythrol tetranitrate), hot Nauheim and oxygen baths, violet ray, diathermy and electric light are the most popular. There are conflicting and contradictory reports regarding all. In some cases, I studied the effects of hypodermic injections of 1 per cent. solutions of nitroglycerin in doses of one-tenth grain, three times a day, with no effect on the symptoms and only occasional temporary reduction of the blood pressure.

The physical changes of the coronaries—their stiffness, narrowed lumen and occasional complete occlusion—probably account for the futility of the vasodilators to regulate the impoverished cardiac circulation and to relieve the resultant precordial symptoms. While theories such as cardiac spasm and anemia have had vogue as the causes of the pain, it seems more probable that the underlying factor is nutritional cardiac disturbance[15] either from inadequate coronary circulation or possibly from toxic products flowing in the general circulation. Acute overbearing pains call for morphin. With milder symptoms, nitroglycerin occasionally gives some relief, especially if combined with atropin sulphate. I have placed main reliance on digitalis, either digipuratum or the tincture given in 15-drop doses, three times a day. The drug should be given whether the auricles fibrillate or the pulse is rhythmic, and should *not* be stopped when pains and other symptoms improve, but should be continued in smaller doses for a long period. A curb should be put on the patient's physical activity. Mental excitement and stress should be avoided. The claim that digitalis in therapeutic doses raises blood pressure has been disproved by recent reports. I myself have never noticed such connection in numerous observations of this phase of digitalis therapy. The further theoretical objection that digitalis may perhaps cause or increase coronary spasm has not been verified by clinical evidence in cases in which the drug had been given for months. In only one case were precordial pains increased by digitalis, though even here there was improvement for several months.

For elimination of edema, most benefit is derived from theobromin sodium salicylate in 1 gm. doses given in water or in wafers three times daily on alternate days. An excellent aid is the Karrell diet—1,000 c.c. of milk daily—given in cupfuls and sipped slowly in three hour intervals. If the patient feels very hungry, apples, oranges and an occasional piece of toast may be added. The duration of the Karrell

12. Janeway and O'Connor: Jour. Exper. Med., 1912, xvi, 541.
13. Foster, N. B.: Uremia, Arch. Int. Med., March, 1915, p. 356.
14. Lewis and Barcroft: Quart. Jour. Med., 1914-1915, viii, 97.
15. Stein: Med. Rec., New York, 1915, lxxxviii, 131.

diet and theobromin therapy depend on the severity of the precordial and other symptoms. If edema be marked, stringent Karrell diet should be carried out for one week. In less severe cases, two or three milk days with theobromin, followed by similar periods of digitalis medication, are indicated. To continue the improvement, it is advisable to have an occasional Karrell day with theobromin for months afterward. The iodids have always been popular in the treatment of arteriosclerotic conditions. The secret of their efficacy may be the fact, now so well known through studies of the Wassermann reaction, that arterial disease is frequently of syphilitic origin. Where this origin is proved or suspected, the iodids are useful; otherwise I have found them of no benefit.

The following case illustrates the effect of therapy:

CASE 1.—Mrs. E., a buxom looking woman of 43, with no children, has complained for three years of dyspnea on walking, and of stabbing precordial pains radiating to the left shoulder. The Wassermann blood reaction is negative. The urine contains a trace of albumin and occasionally hyaline casts. There is slight pretibial edema. Physical examination reveals typical signs of aortitis. The orthodiascopic tracing shows an enlarged left ventricle and a dilated aortal arch. The precordial area is tender on deep pressure. The lowest systolic blood pressure has been 175 mm., the highest, 220 mm. There has never been any correlation between the symptoms and blood pressure. For the first few months she was put on digitalis, theobromin sodium salicylate and occasional Karrell milk days. Within two months the cardiac pains and pretibial edema disappeared. Later, when she became remiss in taking medication and diet, dyspnea and pain recurred. Under stricter surveillance, and the same medication combined with absolute rest at home on the Karrell days, twice weekly, she again slowly improved. This plan of treatment has been followed for three years. The blood pressure is still high, data revealed by physical and Roentgen examination are the same, but there is very marked clinical improvement: precordial pains and edema have entirely, and the dyspnea has almost entirely disappeared.

(*b*) *Hypertension and Myocardial Insufficiency with Labile Vasomotor Mechanism.*—In a smaller group of cases in which the highest systolic blood pressure was around 180 mm., with marked diurnal variations of as much as 30 mm., precordial pains following exercise were the main symptoms. Nephritis was apparently not the main or only cause of hypertension; emphysema and myocarditis were the chief pathologic entities. Experimental subcutaneous injections of nitroglycerin in doses of one-fiftieth grain three times a day had a marked temporary effect on the blood pressure and usually on the symptoms; in one instance, the injections were regularly accompanied by sudden relief of precordial pains and by attacks of giddiness. Such cases apparently represent examples of disturbed labile vasomotor mechanism, rather than the hypertension due to marked vascular disease. Nitroglycerin or other vasodilators given at the onset of pain is apt to be followed by great relief. Digitalis, though useful, is not as beneficial as in Group 1.

(*c*) *Uremic Group.*—Headache, nausea, vomiting, varying grades of anemia, attacks of paroxysmal dyspnea and of precordial distress, high systolic and diastolic pressure, nocturnal polyuria and changes in the retina are the cardinal symptoms. Kidney test meals as advocated by Schlayer and others usually show decreased salt, nitrogen and water elimination, and the blood, retained nonprotein nitrogen. The facies in typical instances is characteristically pallid or ashy gray.

The precordial pains are not relieved by nitroglycerin, digitalis or theobromin sodium salicylate. The pains are apparently caused by retained excremental products flowing in the general circulation; their precise nature is not known. Dietetic measures, especially a diet low in protein and rich in carbohydrate, are of most value. When the renal test shows no water retention, ingestion of large quantities of fluids is sometimes beneficial. For the relief of pain, occasional doses of morphin are necessary. On the theory of a tissue acidosis, I have tried the intravenous injection of 500 c.c. of a 5 per cent. bicarbonate solution in two cases. In one, there was marked relief of the precordial pains and other symptoms; in the other, the pain was relieved only for some hours. Glucose solutions given by the Murphy drip or even intravenously may be of value.

2. *Myocardial Insufficiency Without Hypertension.*—The main complaint of these patients, usually men of sedentary habits between the ages of 50 and 60, is slight precordial pain following exertion. The patients look very well preserved. The urine is normal or may contain a slight trace of albumin with a few casts. Physical examination reveals a slight impurity of the first sound at the apex and a soft systolic murmur at the base; there is no evidence of severe cardiovascular disease. The systolic blood pressure is around 160 mm., rarely much higher; there is no edema. The orthodiascopic tracing usually shows a slightly dilated aortal arch with the left ventricle lying broad and sessile on the diaphragm; whether this ventricular contour is due to flabbiness or to hypertrophy, it is impossible to state. It is interesting to note that these patients commonly give a history of having had painful gastric attacks in previous years, with symptoms pointing to gastric or duodenal ulcer. Excellent results have followed the use of digitalis, given at first in large and then in moderate doses and continued intermittently for weeks or months. Small doses of atropin were sometimes added. At the beginning, the patient's activity was somewhat restricted; later, moderate exercise—golf or walking—was advised. Acidulous food and drink were interdicted, and some light form of nourishment between meals was advised. The following is an illustrative case:

CASE 2.—J. C., man, aged 60, has for years been careful about his diet, particularly in the avoidance of acids, any indiscretion being followed by epigastric pains. For several months he has complained of precordial knifelike, paroxysmal pains on walking. Examination shows a well nourished man; there is no edema, the urine is normal, the average systolic blood pressure is 160 mm. The orthodiascopic examination reveals a somewhat enlarged left ventricle, the aortal outline somewhat broader than normal. There is an impure first sound at the apex and base. There is no dyspnea or decompensation. One digipuratum tablet was given at first three times daily and then continued in smaller doses for several months. Atropin sulphate, $\frac{1}{150}$ grain three times a day, was also prescribed. The patient is now doing his regular work, has taken ocean baths during the summer, and has had no recurrence of precordial pains.

3. *Acute Rheumatic Endocarditis and Rheumatic Endocarditic Exacerbations.*—These cases usually occur in young persons with definite rheumatic histories, with mild tachycardia, with no dyspnea, and with marked auscultatory evidence of valvular disease (usually mitral stenosis). Slight and irregular rise of temperature is the rule. The patients complain not only of the subjective feeling of palpitation but also of "sticking" pains which they localize in the heart

itself. There are usually no Head's zones. The cause of the rapid heart action and of the precordial pains, even in the absence of abnormal temperature and other rheumatic manifestations, seems due to the irritative effect of fresh exacerbations of endocarditis. The best medication is sodium salicylate given in full physiologic doses. My routine has been 1 gm. hourly until six doses have been given or tinnitus occurs; the dose is then decreased. Bromids in moderate amounts and ice bags to the precordium are also helpful. Comparative or absolute rest in bed may be necessary for some time.

4. *Endomyocardial Disease with General Circulatory Failure.*—The fundamental cause of the pains is apparently nutritional disturbance consequent on local circulatory failure in the heart itself. Precordial Head's zones or muscle tenderness are often present. The therapy for the relief of pain is the same as for the relief of the decompensation. This ordinarily means vigorous and long continued digitalis medication, and, for the relief of edema, theobromin and the dietetic regimen already outlined. If compensation is restored, cardiac pains and Head's zones disappear.

5. *Embolic Infarcts of the Main Coronaries and Their Branches.*—It is known that patients who have recovered from cardiac pains have occasionally shown myocardial scars and other changes resulting from old infarcts. Huchard,[16] in a summary of 145 necropsies of coronary disease with cardiac pains, found five due to embolism of the artery. Recently several cases with necropsy reports of embolic infarcts of the main coronaries have been described; the patients died within a few days or hours with symptoms of intense precordial distress. I have observed several cases with intermittent pains lasting days or weeks, in which the symptoms were possibly caused by infarcts or emboli of the smaller coronary branches. Curschman[17] in 1891 first described this condition; he reported three cases with necropsies. Two patients died some years after the onset of symptoms. Both showed localized myocarditis. In one there was aneurysmal dilatation confined to one sclerosed arteriole; in the other there was an obliterated coronary branch of the third order. The third patient died suddenly and was properly diagnosed *intra vitam;* an embolus was found in a coronary branch of the second order.

The history of the three cases that I have observed follows:

Case 3.—S. S. (Lebanon Hospital, Dr. R. Stein's service), woman, unmarried, aged 18, under observation three years, gave a typical rheumatic history. She has a marked double aortal lesion and a tremendously hypertrophied heart. The Wassermann reaction and frequent blood cultures were negative. The systolic blood pressure was 180 mm., the diastolic, 20 mm. For months she has had many attacks of moderate irregular fever. On several occasions, the attacks were initiated by sharp precordial pains followed by tachycardia or auricular fibrillation, by convulsive twitchings and tremors and by loss of consciousness lasting several days. Latterly these attacks have become more severe and were followed by well localized Head's zones.

Case 4.—X. M. (Lebanon Hospital, Dr. R. Stein's service), woman, unmarried, aged 20, gave a history of continued attacks of rheumatism and "heart trouble." During the last few months she had two attacks similar to but not quite so severe as that with which she entered the hospital. There were continued agonizing pain and exquisite tenderness even to the slightest touch over the precordium, and radiating pains to the left shoulder and forearm. The temperature was 104. A mitral regurgitant lesion was present. There was no edema. The breathing was frequent and shallow, apparently owing to the attempt to keep the chest at rest. After one week, the high temperature, sharp pain and rapid breathing disappeared; the patient felt comfortable, but precordial pain on firm pressure was still present when she left the hospital.

Case 5.—A. B., man, aged 40, with a double mitral lesion, gave a history of having felt well until three months prior to hospital admission. He then had an attack of mania (?) lasting three days. Subsequently he developed pneumonia and pleurisy, accompanied by chills and high fever and by attacks of paroxysmal auricular fibrillation. After several cultures, a nonhemolytic streptococcus was isolated from the blood. During several months of hospital observation, there was a constant sensitive area near the cardiac apex.

The characteristic of these three cases was not only the rise of temperature and evidences of active endocarditis, but also the progressive tendency of the disease and the presence of local tender precordial areas. Though such characteristics might have been due to the endocarditis alone, the distinct localized sensitized areas and the clinical course make it probable that in addition, acute focal myocarditis was also present. From clinical and physical signs and from the progressive and probably bacterial nature of the endocarditis, it seems fair to assume that such focal myocardial changes originated in embolic infarcts of the smaller coronary branches, accidents not necessarily incompatible with life. Necropsy findings will of course be necessary to clinch the diagnosis.

6. *Cardiac Syphilis.*—Cardiac syphilis is an extremely frequent cause of precordial pain. The latter is usually substernal, dull, boring and aching. It may, however, have the distribution and characteristics of the types already described. One may probably ascribe the frequency of these substernal pains to the almost invariable presence of syphilitic aortitis and periaortitis, to the fact that the root of the aorta is surrounded by rich ganglionic and nerve plexuses, and to the varying degrees of aortic dilatability and pressure. Head's zones are rare. Therapy consists in the treatment of the underlying disease. Though salvarsan was originally considered contraindicated in cardiac syphilis, abundant experience has since shown that given first in smaller, later in larger doses, salvarsan combined with the usual mixed treatment is of great and definite value. The best routine method of its administration is 0.2 gm. injected intravenously every week until 0.6 gm. is given; later, full doses may be given, the frequency depending on the cardiac condition. Salvarsan sometimes benefits and controls the pains immediately, apparently because it controls the syphilitic inflammatory exacerbations. Where the pathologic process in the aorta, the coronaries, or myocardium has reached an extreme degree of permanent destruction, salvarsan or any other treatment can be of little or no avail. However, since our present methods of examination are not sufficiently exact to diagnose such conditions, I believe the treatment outlined is indicated in every case of cardiac syphilis except when the patient is moribund. Cardiac failure, if present, should receive its appropriate treatment, that is, digitalis; and if necessary, theobromin sodium salicylate.

7. *Premature Arteriosclerosis.*—This comprises a rare group found in young adults. Persistent precordial distress is often present for months. Gastric symptoms similar to those of hyperacidity occasionally predominate the clinical picture. Physical examination may give no hint of the severity of the pathologic

16. Huchard, Quoted by Osler: Angina Pectoris and Allied States, p. 112.
17. Curschman: Kong. f. Inn. Med., 1891, x, 275.

process which is attacking the entire cardiovascular sytem, and which finally results in extreme degrees of intimal thickening and of lime deposits throughout the aorta, coronaries, arterioles and endocardium. Indeed, such hearts may be pathologically identical with those of persons dying of senility. For months there may be no decompensation in the ordinary sense. Urine may be normal, the blood pressure not high, the heart sounds may be somewhat distant, and the only indication of severe cardiac disease, besides the precordial pains, may be the presence of an arrhythmia, usually sinus arrhythmia or extrasystole. Other occasional symptoms are dyspnea and nocturnal attacks of precordial distress.

An illustrative case with necropsy report follows:

CASE 6.—C. F., man, aged 42, of athletic build, had been a heavy smoker. For four years he had suffered from gastric symptoms resembling hyperacidity; belching was particularly prominent. The gastric contents showed high values for free hydrochloric acid. He had frequent attacks of vasomotor disturbances: numbness, coldness and pallor of the hands. It was only late in the disease, when an attack of hemiplegia occurred, that attention was focused on the possibility of a generalized arteriosclerosis as the underlying disease. Though several Wassermann tests were negative, salvarsan and mixed treatment were given; these had no effect on the disease. At necropsy, marked thickening and calcareous deposits were found on all the cardiac valves; the coronaries and their branches showed extreme thickening; the myocardium presented many fibrous patches; the entire heart was somewhat enlarged. Spirochetes were not found in the aortal tissue.[18] The heart accurately resembled that of a very old person suffering for many years from severe generalized arteriosclerosis and cardiosclerosis.

The cause for such presenile sclerosis is still undetermined. It is possible that unknown infections and toxemias are etiologic factors. In one instance the disease originated within two years of an obscure pulmonary infection which had lasted several months. For the present, one may only state that from some unknown cause, the elastic tubing comprising the vascular system becomes prematurely defective and diseased. Except digitalis for temporary relief of dyspnea, treatment is of no avail.

8. *Senile Arteriosclerosis and Cardiosclerosis.*—The clinical picture is usually clear. All the palpable arteries are tortuous and thickened; the blood pressure usually high, and the heart somewhat enlarged; the systolic sounds at the apex and right base are impure; the second sound at the right base is sometimes accentuated. The precordial pains usually occur with exertion; though sometimes intense, they are more often of mild character. They seemingly depend on coronary sclerosis. Because of the advanced pathologic changes, the patients are rarely relieved by medication. Digitalis and theobromin sodium salicylate sometimes help, the amount of relief apparently depends on the degree of healthy tissue still remaining which may react to medication. The patients usually require prolonged periods of comparative rest.

9. *Sacculated Aneurysms.*—In a general way, the precordial pains depend on the size and position of the aneurysm. If large, the pains are those due to pressure on the surrounding structures, as the intercostal nerves, and the ribs. If small, and involving the first portion or arch of the aorta, the symptoms are similar in character and eitology to those described under cardiac syphillis (Group 6). The therapy is also the same as that there indicated. My experience with wiring and the electric current treatment according to the method of Lusk is limited to two cases. In one, after some weeks small, frequent external hemorrhages occurred, due to the perforation of the sac by the end of the wire; the patient finally died of anemia. In the other, the patient did not improve during his stay in the hospital; he died suddenly some weeks later; a necropsy was not permitted.

10. *Precordial Pains Due to Tabagism.*—It is questionable whether the "tobacco heart" should be classified under organic cardiovascular disease. Since it has been shown experimentally[19] that intravenous injections of nicotin into rabbits are occasionally followed by aortal atheroma, it has sometimes been assumed that smoking in man may produce similar changes in the vascular system and possibly in the myocardium. Direct proof, however, of such damage is still lacking. Besides, it has been shown that the rabbit's aorta fairly frequently presents spontaneous atheroma.[20] In a number of experiments by Gy in which rabbits were made to inhale smoke for a definite period of time, only a very few were found to have aortal changes; indeed, the proportion was not more than that usually found in the normal rabbit. In a study of a large series of hearts of smokers who died from other causes, Brooks[20] found no changes except slight degeneration of the papillary muscle, which he ascribed to the rapid heart action usual in smokers. Physiologic experiments have shown that nicotin, the main tobacco alkaloid, is a powerful neurotropic poison which affects particularly the sympathetic ganglia and the peripheral vasodilators. In view of these teachings and in the absence of proof of pathologic changes in the human heart due to tabagism, it is reasonable to assume that the frequent precordial pains and distress are caused by disturbance in the coronary circulation and by referred pains from irritation of the sympathetic ganglia.

The pains may be dull and aching or sharp and radiating; occasionally, the first premonition may be very sharp lancinating precordial pains radiating to the left shoulder and forearm, and accompanied by unconsciousness. For example, a healthy man of 40, a heavy smoker, while running for a train, was suddenly attacked by terrific precordial pains followed by unconsciousness lasting one hour. The cardiovascular examination revealed nothing abnormal. For weeks after the attack, any slight movement—even turning in bed—brought on pains. The patient was finally able to go about and resume his usual occupation. At present, six years after his first fainting spell, he feels quite well. He again smokes moderately.

The most frequent arrhythmia in smokers is extrasystole, usually auricular. Other arrhythmias, however, are occasionally encountered. Thus I have found two cases of sino-auricular block, a rare arrhythmia, one of auricular flutter, and one of auricular fibrillation due to smoking.

Most cases of tobacco pains and arrhythmias cease when smoking is stopped. Occasionally pains may occur intermittently for years. In such cases, nitroglycerin given regularly or at the time of the pain is of benefit. The bromids are of value in helping to control persisting arrhythmias.

18. I am indebted to Dr. M. Rothschild for the necropsy report.

19. Adler and Hensel: Jour. Med. Research, xv, N. S., x, 229. Gy: Paris theses, 1908, 1909.

20. Brooks: Med. Rec., New York, 1915, ci, 830. Lucien and Parisot, quoted by Vaquez: Arch. d. mal. du cœur, 1915, viii, 678.

B. PRECORDIAL PAIN OF EXTRACARDIAC ORIGIN

1. *Gastric Disturbances.*—Patients with gastric disturbances, particularly those in whom epigastric distress is marked, are apt to suffer from referred precordial pains. The clinical picture is that of hyperacidity, or of gastric or duodenal ulcer. Belching, loud and explosive in character, is usually a prominent symptom. The precordial pains are commonly sharp, neuralgic, fleeting and inconstant in character; their distribution is usually along the fourth and fifth intercostal spaces. Pain referred to the left shoulder is rare. Corresponding to the anterior distribution, there may be a similar area posteriorly. A precordial Head's zone is unusual, its presence and area of distribution inconstant. There may be correlation between the gastric symptoms and precordial pains, particularly when "hunger pains" and belching are marked. There is no decompensation or dyspnea. When the gastric symptoms are stormy, extrasystoles may be present. Treatment is naturally directed to the underlying disease. I have found most benefit from atropin given in full physiologic doses three times a day before meals, and from an antacid powder containing equal parts of sodium bicarbonate, magnesium oxid and oleosaccharated peppermint given in half teaspoonful doses after meals; appropriate diet given frequently and in small quantities is important. As already noted, gastric symptoms may accompany cardiac disease, so that correlation and study of all clinical data are necessary for a correct diagnosis. Unless the extrasystoles are subjectively annoying, they require no medication; otherwise they may be partly controlled by bromids.

2. *Precordial Pains from Esophageal Disease.*—Carcinoma, syphilis and diverticula are the usual organic causes of referred intercostal and precordial pains. In some cases, organic disease is absent; the symptoms are due to esophageal spasm, especially of the lower end of the esophagus, or to ulcerations affecting the surrounding structures. The usual symptoms are an uncomfortable, conscious gulping effort on swallowing solids or fluid, often accompanied by sharp pains referred to the lower sternum, and radiating to the precordium or even to the upper and lower extremities. Such symptoms are occasionally mistaken for those due to aortic aneurysm, and the difficulty in swallowing, to aneurysmal pressure on the esophagus.

An illustrative case with therapy follows:

Case 7.—H. G. (Har Moriah Hospital), man, aged 48, tailor, stated that for seven years he had choking sensations in the larynx and severe substernal pains on attempting to swallow solid food. These pains occasionally radiated to the head, arms and legs. The symptoms became progressively worse. The neurologic and physical examination revealed nothing abnormal; the fluoroscope showed a normal aorta. Wassermann reactions of the blood and spinal fluid were negative; the stools, urine and gastric contents were normal. Roentgenograms showed a pouchlike dilatation of the middle part of the esophagus. An esophageal bougie was arrested opposite the middle of the sternum. For purposes of dilatation, bougies of increasing caliber were passed. At first semisolid, later solid food was given. Atropin sulphate, 1/100 grain three times a day, was administered. The pains gradually subsided and finally disappeared. The patient was taught to pass a stomach tube on himself; this he did for some weeks after he left the hospital. An examination months later showed that esophageal symptoms and pains had disappeared, and that the patient had increased considerably in weight.

3. *Precordial Pains Accompanying Crises of Acute Catarrhal Pulmonary Affections.*—Such attacks of precordial pain are common with the crises of influenzal bronchitis, especially when sharp critical sweats are present. Head's zones in the left nipple region, and arrhythmias (especially sinus arrhythmia and extrasystoles) are frequent, a combination superficially suggestive of toxic myocarditis. The symptoms, however, last only a few days; except for pain and arrhythmia, the heart is normal; there is no decompensation or edema. Examinations made months or years later have shown that the cardiovascular system had not been damaged.

The following is an example:

Case 8.—I. F., physician, aged 43, never had any cardiac complaint. Two weeks ago he contracted pharyngeal and bronchial grip. There were critical defervescence, sharp sweats, an irregular pulse, and sharp stinging pains in the left breast. The patient feared that he had an infectious myocarditis and carefully avoided every unnecessary motion. Examination revealed a small Head's zone confined to the left nipple region, and an arrhythmia which polygraphic and electrocardiographic tracings showed to be due to auricular extrasystoles. Otherwise the cardiovascular symptom was normal. The patient was reassured, told to get out of bed, and given atropin sulphate, 1/150 grain three times a day before meals, and a dose of bromids at night. He was sent to the country and advised to exercise as much as he chose. He was soon able to walk several miles daily. Within one week the extrasystoles and pain disappeared, and have not since returned.

4. *Precordial Pains Accompanying Vasomotor Disturbances at the Menopause.*—Women at the climacteric with marked vasomotor disturbances (flushes, heat flashes, cold extremities, etc.) frequently have persistent precordial pains without evidence of organic disease of the heart or neighboring organs. Such pains are possibly evidence of vasomotor circulatory disturbances in the heart itself. The patients rarely react well to medication. Bromids and small doses of atropin and nitroglycerin are of most value. Ovarian tablets are occasionally helpful. Hurry and excitement should be avoided.

5. *Precordial "Neuralgias" of Unknown Origin.*—Under this heading is grouped a small number of persons, usually young and apparently healthy and vigorous, without vicious habits, with no rheumatic manifestations, in whom continued and frequent examinations of the heart and other organs reveal nothing abnormal. Occasionally, sudden explosive belching or singultus is present. In one instance, smoking some years previously might have been an etiologic factor. The pains are apparently quite haphazard in their onset and duration, and defy medication and therapy.

In this group may also be placed those female patients who complain of indefinite chest pains and distress, and who, from other manifestations, apparently suffer from a functional disorder of the internal secretory organ or organs. They are occasionally relieved by medication aimed at substituting the presumed secretory deficiency.

6. *Pott's Disease, Mediastinal and Spinal Tumors, Tabes, Intercostal Neuralgia and Myalgia, Pleurisy and Pericarditis.*—These are among other extracardial conditions and diseases which may produce precordial pain. Their discussion is not within the scope of this paper.

The etiology and types of precordial pains here described are admittedly incomplete. Only those most frequent and clinically important have been discussed.

and their correlation with intracardiac or extracardiac disease described. It is recognized, also, that the various groups sometimes overlap. In organic cardiovascular disease, I have endeavored to estimate roughly the extent and nature of the pathologic damage, and to gage, if possible, the amount of remaining healthy tissue which may be favorably influenced by therapy. Thus studied, one may obtain a basis for rational therapy, with its prospects and limitations. The postmortem specimens of advanced coronary, endocardial and myocardial disease, with the history of precordial distress during life, should not blind us to the fact that some of these patients have lived many years despite their diseased organs, and that other patients with equally damaged hearts have not suffered from precordial distress during life.

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CERTAIN ASPECTS OF INFANTILE PARALYSIS

WITH A DESCRIPTION OF A METHOD OF MUSCLE TESTING *

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This paper contains the account of a combined physiologic and orthopedic study of certain phenomena of infantile paralysis. The whole matter owes its inception and present status to the State Board of Health of Vermont, which by the generosity of an anonymous donor was enabled to finance a scheme for the study and treatment of the disease quite unprecedented in its scope and thoroughness. The entire work has been conducted under the direction of the board, which has borne the whole expense of the studies in Boston and Vermont.

The inquiry was started in the late autumn of 1914, the Rockefeller Institute through Dr. Simon Flexner taking charge of the epidemiologic end of the inquiry and opening a laboratory in Burlington, while to one of us (R. W. L.) was assigned the therapeutic side of the problem. Later, for reasons to be stated, the physiologic department of Harvard University was asked to assist in the study, and a system of muscle measurement was devised by one of us (E. G. M.).

This system of measurement was put in use in the early summer of 1915 in the orthopedic department of the Children's Hospital, and later used by us in a trip to Vermont made in July, 1915, for the purposes of treatment. So much new light was thrown by its use on certain phenomena of the disease that two subsequent trips to Vermont were made by one of us (E. G. M.) in August and September to make observations on patients under treatment.

The material available for study is as follows: At the first series of Vermont clinics in January and February, 1915, 235 patients applied for treatment, and at the second series in July, 145. From these figures should be deducted seventy-six seen at both clinics, making 304 patients seen and prescribed for in Vermont. One hundred and one patients from the orthopedic clinic of the Children's Hospital, Boston, and from the private practice of one of us have been added to the Vermont material for purposes of study. The results of the analysis of cases on the first trip have been published,[1] and a short preliminary report on the method of muscle testing has been made.[2]

In the present paper we first discuss the reasons for the use of a muscle test, second, describe the muscle test, and third, present conclusions obtained by the use of the muscle test in the cases mentioned.

The general thesis of this paper is as follows: The observations in about 300 cases in Vermont have shown that in all cases, old and recent, infantile paralysis has been found in most muscular groups not to be a paralysis in the sense of a complete loss of power, but a weakening of these muscles. Now weakened muscles can, as a rule, be made stronger by judicious exercise, just as can normal muscles. Our therapeutic problem, therefore, requires the closest possible study of such muscles and of the therapeutic means by which their individual power may be increased. It is a very important matter to the parents of a child with a gastrocnemius muscle reduced to only 20 per cent. of its normal power whether this muscle ultimately returns to 40 per cent. or 90 per cent. of its normal strength.

WHY A MUSCLE TEST WAS DESIRABLE

The original study of the Vermont cases, in which the hand was used to estimate voluntary contractile power in the individual muscles, showed in 150 cases of a few months' duration that partial paralysis was more common than total in the proportion of 2.5:1 (1,036 partial to 416 total paralyses). In the eighty-six cases of the 150 available in July for closer study by means of the muscle test, there were found by this method 111 totally paralyzed and 958 partially paralyzed muscle groups, a proportion of about 9:1. It is evident, therefore, that the bulk of any study will be in cases of "partial paralysis."

At the outset of the Vermont work, muscles were classed as normal, partly paralyzed or totally paralyzed. The first and the last class were clear enough, but in the "partly paralyzed" division we had to group muscles which were just short of normal and muscles which showed only a flicker of movement on attempted contraction. Between these two widely separated conditions existed every degree of disability, yet one must put them all in one class. Exact study of the phenomena under these conditions was impossible.

Again, in the matter of treatment some scale of measuring improvement or the reverse was urgently needed. "Impressions" that electricity of one kind or another, or rest or exercise were beneficial have filled literature; unsupported assertions, marvelous cures, fantastic treatments have too often been advanced on the slenderest of grounds. With the realization that partial paralysis was the usual form of affection, it became imperative to have some scale by which to work out what should be a precise and improved treatment. The muscle test offers a practical quantitative scale by which the effects of modifications of treatment may be studied week by week and month by month.

* A Report to the State Board of Health of Vermont.

1. Lovett, R. W.: The Treatment of Infantile Paralysis: Preliminary Report, Based on a Study of the Vermont Epidemic of 1914, THE JOURNAL A. M. A., June 26, 1915, p. 2118.

2. Martin, E. G., and Lovett, R. W.: A Method of Testing Muscular Strength in Infantile Paralysis, THE JOURNAL A. M. A., Oct. 30, 1915, p. 1512.

Catarrhal Pulmonary Affections.—Such attacks of pre- frequent and clinically important have been discussed

THE MUSCLE TEST

The muscle test devised consists of estimating the strength of the various muscular groups by means of spring balances. Standard positions for each group are chosen, so that the same position is assumed on consecutive observations. It is easier to induce children to pull against resistance, from a fixed position, than to get them to initiate a movement, so that the strength test is based on the patient's power to hold a position against the pull of a spring balance, and the resistance registered on the balance in the standard position represents the muscular strength. The pull is exerted from a sling attached to the member to be tested, and the line of pull is at right angles to the long axis of the limb. The balance is hooked into the sling, and the other end held by an assistant. Two tests are taken, and the larger reading recorded. The results have been surprisingly accurate, and consecutive readings on the same patients have been used to check up this accuracy.

From the unaffected limbs of patients, and from normal children and children from the scoliosis clinic, there has been constructed a table of normals for both arm and leg for children from 4 to 18, with an additional series for adults. This table has shown that the general relation of the strength of the various muscles in children is surprisingly constant, and that a marked deficiency of a muscular group in a child elsewhere paralyzed is very suggestive of paralysis.

The muscle groups tested are twenty-two in number for each side: in the leg, plantar and dorsal flexion and inversion and eversion of the foot, flexion and extension of the knee, adduction, abduction, flexion and extension of the hip (ten in the lower extremity); in the arm, the pectoral, latissimus dorsi, anterior and posterior deltoid, flexion and extension of the elbow,

TABLE 1.—DETAILED TECHNIC OF MUSCLE TESTS

Muscle Group	Subject	Sling	Assistant	Operator
1. Plantar Flexion..	Supine on table; legs straight; foot in plantar flexion; pl in padded board 6 by 2½ inches under sole	About ball of foot; upper edge at proximal margin of toes	At subject's head; reaches along body to balance, hooked to sling	Holds ankle lightly with finger tips; notes yielding of joint by touch; reads scale
2. Dorsal Flexion....	Supine; legs straight, foot in extreme dorsiflexion	About dorsum of foot; position as in 1	At subject's feet; reads scale	Holds ankle firmly; heel off table; notes and calls instant of yielding
3. Inversion	As in 2; legs well apart; foot in extreme inversion	About ball of great toe....	At subject's side; reads scale	As in 2
4. Eversion	As in 3; foot in extreme eversion	About outer margin; upper edge at middle of least toe	At opposite side from 3; reads scale	As in 2
5. Adduction	As in 2; both legs well over at side of table; toes kept vertical	In hollow above external malleolus†	At subject's side.....	At subject's feet; holds leg lightly; reads scale as leg comes in line with axis of body
6. Abduction	As in 2; legs apart.....	In hollow above internal malleolus	At opposite side from 5.....	As in 5
7. Hip Extension....	On side; axis of pelvis held vertical by brace or additional assistant; uppermost leg in extreme extension; knee straight	In hollow back of knee.....	In front of subject.....	As in 5
8. Hip Flexion.....	As in 7; leg in extreme flexion at hip; knee flexed to right angle	Over front of leg just above knee	At the subject's feet: Braces subject by holding lowermost leg firmly against table	Faces subject; supports leg; reads scale when leg is at right angle to axis of body
9. Knee Extension...	Prone; leg flexed at knee.....	In hollow above malleoli...	At subject's head.....	At subject's right side; right hand holds upper leg firmly on table; left hand holds sling in place and extends lower leg 12-15 degrees beyond right angle; reads scale as in 8
10. Knee Flexion.....	Prone;* leg flexed well beyond right angle	As in 9.....	At subject's feet.....	As in 9, except that leg is flexed beyond right angle
11. Pectoral	If legs normal, standing; if weak, sitting on rigid stool; arm across front of body, elbow straight; hand in normal pronation	Immediately above elbow joint	At subject's side; pulls horizontally outward and backward: Angle with sagittal plane, 45°	Behind subject; supports body with arms; reads scale as arm comes in line with axis of body
12. Latissimus Dorsi..	As in 11; arm across back.....	As in 11.....	As in 11; except that pull is outward and forward	In front of subject, otherwise as in 11
13. Anterior Deltoid..	As in 11; arm thrust outward and forward	As in 11.....	Behind subject; pull inward, backward and downward	As in 12
14. Posterior Deltoid.	As in 11; arm thrust outward and backward	As in 11.....	In front of subject; pull inward, forward and downward	As in 11
15. Forearm Extension	Supine on table; arm at side close to body; elbow flexed nearly to right angle	At wrist	At subject's head.....	At side; holds upper arm firmly on table with one hand; sling and forearm in position with other; reads scale when forearm is at right angle with upper arm
16. Forearm Flexion.	As in 15; elbow in extreme flexion	At wrist	At subject's feet.....	As in 15
17. Wrist Extension..	Sits on edge of table; elbow flexed at right angle; wrist in extreme extension	Gauze sling over knuckles, thumb not included	In front of subject; reads scale at call of operator	Holds subject's wrist firmly; notes yielding of joint
18. Wrist Flexion.....	As in 17; wrist in extreme flexion	Gauze sling about palm close to base of fingers	As in 17.....	As in 17
19. Finger Extension.	As in 17; palm supported firmly by operator or by upright brace; fingers in extreme extension	Gauze sling about distal articulations of first phalanges	As in 17.....	As in 17
20. Finger Flexion....	As in 19; fingers flexed to right angle; forearm firmly supported	As in 19.....	As in 17.....	As in 17; notes yielding of joint by light pressure of fingers against back of hand
21. Thumb Adduction	As in 17; palm down; fingers extended; thumb in extreme adduction, slightly flexed	At distal articulation of first phalanx	As in 17.....	Holds subject's wrist with one hand, fingers with the other; calls when thumb appears from beneath hand
22. Thumb Abduction	As in 17; thumb in moderate extension	As in 21; passed beneath hand to balance	As in 17.....	As in 21; calls when thumb is drawn to side of hand

* Adults sometimes have a cramp in knee flexors. This can be avoided by taking Test 10 with subject lying on side.
† If other thigh muscles are severely affected, Tests 5 and 6 may be checked by tests with sling just above knee. Strength ratio should be 2:1.

flexion and extension of the wrist, flexion and extension of the fingers, and adduction and abduction of the thumb (twelve in the upper extremity). We have not been able to devise reliable methods for testing the shoulder rotators or back or abdominal muscles.

The technic is given in Table 1. At first, attempts were made to use clamps, etc., to hold the limbs, but with these it was possible to obtain leverage and thus to vitiate the observations. The flexibility afforded by holding the balance in the hand has been of great advantage.

In the presence of fixed contractions, pure muscular movements cannot be elicited reliably, and the readings in such regions must be accepted with care.

In case extremely weak muscles are to be tested, gauze loops about 3 feet long are used for suspending the limb. In all such cases the positions most favorable for the function of the individual muscles are taken, in many instances differing from the standard positions given in Table 1. Tests on extremely weak muscles are, however, not so reliable as those on stronger muscles.

CONCLUSIONS DRAWN FROM THE USE OF THE MUSCLE TEST

The following observations rest on studies on 177 patients, on whom 13,000 observations in 400 series were made, forty-four different muscular groups, twenty-two on each side of the body, being available for study.

Distribution of Paralysis.—The muscular affection is much more widespread than ordinarily supposed, thus corresponding closely to the pathology as observed of late years. It is rare to find one muscular group affected without manifestations elsewhere; for example, we often class a case as gastrocnemius paralysis, but rarely in our observations (two in 177) has this been found to exist alone, other muscles nearly always being weakened. When one leg is involved it is common to find some weakening of some of the muscles of the other leg. When both legs are affected, some arm muscles are often involved. This fact is well to bear in mind in formulating treatment.

In thirty-two cases of the series, taken consecutively from the files for this analysis, the following data were observed:

Ten cases by manual examination had been classed as having only one leg affected; by the muscle test nine of these showed weakness of muscular groups in the other leg. Of the other twenty-two cases, four had obvious paralysis of all four members. In the remaining eighteen cases of paralysis of more than one limb, no new paralysis was revealed by the muscle test in eight, while in ten, unsuspected involvement in another limb was found.

Distribution of Total and Partial Paralysis.—Table 2 shows that there is a predilection on the part of total paralysis for the lower leg. In the Boston series the cases were of longer duration, of a severer type, many requiring operation, but the ratio is not widely different in the two classes. This confirms the observations made in the 150 cases seen on the first trip, where the peroneal and anterior tibial muscles showed of all muscles the largest incidence of total paralysis.

Partial paralysis may be classed as severe (one third or less of normal power) or moderate (one third or more of normal power). Two classes of cases are available for this analysis, one the Vermont group, mostly affected in 1914, and the other the Boston group, mostly affected before 1912, being largely hospital cases awaiting operation.

The observations given in Table 3 extend the findings of the first study of the Vermont cases, that paralysis is severest in the foot and diminishes toward the hip, and is severest in the shoulder and diminishes toward the hand. In that paper, however, one dealt with the relation of total to partial; here another class is available, and the ratio of severe to moderate bears out the same fact in two widely different classes of cases.

Paralyzed Muscles Should not Lose Power.—In the period covered by our observations (two months in the Vermont cases and longer in some of the Boston cases), it has appeared that the strength of affected muscles tends on the whole to remain stationary or to improve, and that a loss of strength is not to be expected, and when it occurs should be investigated.

TABLE 2.—MUSCULAR GROUPS SHOWING TOTAL PARALYSIS

	Vermont	Boston
Below knee	74 (82 per cent.)	87 (82 per cent.)
Elsewhere	16	19
Total	90	106

This statement rests on the study of forty-six cases of from one to five years' duration (three from 1911, one from 1913, forty-two from 1914) tested at an interval of two months or more; 549 affected muscular groups were studied, 356 being under treatment by muscle training, and 193 not under treatment. Seven per cent. of the muscles under treatment showed a loss of power in this interval (twenty-five muscle groups in thirteen cases). In nearly all instances this loss was to be accounted for by conditions known at the time of observation, such as fatigue, ill health, overuse, etc. In the muscles not under treatment there was some loss of power in 24 per cent. (forty-seven muscle groups in twenty-one cases). In a large proportion of these, the conditions were such as to explain this observation.

TABLE 3.—DISTRIBUTION OF MUSCULAR GROUPS SHOWING PARTIAL PARALYSIS

	Vermont		Boston	
	Severe	Moderate	Severe	Moderate
Lower extremity:				
Leg	115	109	203	161
Thigh	89	61	101	76
Hip	108	177	117	168
Upper extremity:				
Shoulder and arm	91	87	58	80
Forearm and hand	58	89	18	66

Overfatigue and its Detrimental Effects.—The data as to the effect of muscular fatigue from overuse, overexercise therapeutically given and overmassage appeared to be important, and certain clinical observations were formulated after the first series of clinics.[1] A quotation follows:

> It has been repeatedly observed in my private practice that power might begin to return in a very faint degree to a muscle while under muscle training, and that with care this power would steadily increase, but if that muscle were exercised even very gently every day, that power would diminish or disappear, so that we exercise such muscles only once in three days at the outset, increasing the work most carefully. . . .
>
> Illustrative cases seem to me to show that much smaller degrees of overuse may be deleterious than is generally supposed. Probably any of us would agree that gross and persistent overuse of partly paralyzed muscles would be undesirable; but it seems to me reasonable that in the early stage of returning power, we should be exceedingly careful

in the use of muscles in walking and in the use of heavy and prolonged massage, much more careful than we are at present, if I may judge the practice of others by my own previous methods.

This matter was confirmed and made more definite by the muscle test. Illustrative cases follow:

CASE 1.—A boy of 5, with the onset in 1914, was having at the time of the first test one and one-half hours of massage and one hour of muscle training daily. This was changed, and he was given one hour only of gentle muscular exercise, and the second observation showed a substantial gain of strength in all affected muscles, an illustration of the effect of too much treatment.

CASE 2.—A boy with the onset in 1914, in July showed partial paralysis of the left arm. He then began to milk ten cows daily, and in a month had lost strength in all of his left arm muscles except the biceps and triceps, which had gained slightly. The loss was greatest in the muscles of the forearm, which were of course those most exercised in milking, an illustration of the effect of overuse of the muscles as a cause of loss of power in the overused muscles.

In this matter of the study of the detrimental effect of fatigue and the beneficial effect of proper muscular exercise lies apparently one of the most important uses of the method. We need to know the dose of the remedy which we are using.

Variations in General Muscular Strength.—Children are subject to variations in muscular strength at different times, the whole scale of readings for both normal and affected muscles being sometimes decidedly higher or lower than their usual values; but the raising or lowering of the whole scale while the relative strength of the muscles remains practically the same is apparently dependent on general conditions and does not affect the question of paralysis. During the great heat of September, 1915, a decided falling off in muscular strength was noted in several cases whose normal scale was known, and observations were abandoned until it became cooler.

Abortive Paralysis.—That cases of so-called abortive paralysis are often really cases in which paralysis exists, but is too slight to be detected by the ordinary examination, seems likely. Two observations bear on this point:

In one family in Burlington, three children were similarly affected at about the same time. One showed a frank paralysis, and the other two did not, and were classed as abortive cases and showed nothing abnormal on the regular examination. The muscle test revealed in one of these a decided weakness of the gluteal muscles of one leg, showing that the case was classed as abortive only because the regular examination which was made was not delicate enough. In the other case, no departure was shown from the normal scale for a child of that age. This must therefore pass as a purely abortive case.

The method has probably a diagnostic value in detecting in cases which have been regarded as possibly abortive a decided local muscular weakness too slight to be detected by the ordinary manual examination.

Effects of Treatment.—Muscle training as contrasted with simple massage showed that after a period of a few weeks, that is, when the treatments have been given for a sufficient time to demonstrate their effect, muscle training is superior to massage. This became evident after the third series of tests, and not after the second series, but a final conclusion cannot be presented on such short observation.

Muscle Training.—As to the effects of treatment, in the time available for observation the following facts appeared: The chance of improvement in affected but not totally paralyzed muscles under expert treatment by muscle training was about 6:1, under supervised home exercises 3.5:1, under home exercises without supervision 2.8:1, while untreated affected muscles in these patients showed an improvement ratio of 1.9:1. These patients were nearly all affected in 1914, and represent cases at the end of the first year. They are all from the Vermont Group and were treated there.

Spontaneous Improvement.—The ratio of 1.9:1 chance of improvement in untreated muscle groups is apparently partly spontaneous improvement, but this question is so very important in the matter of prognosis that it demands further analysis, because in most of these patients other muscles were being treated, and the figures to be quoted indicate that untreated muscles are favorably affected by the systematic exercise of other muscles. There were available in the Vermont series only seven patients on whom repeated muscle tests were made who were not receiving treatment because the prescription had not been followed by the parents.

In these patients, in thirty-seven affected muscle groups there was improvement in nineteen and none in eighteen, a ratio of 1:1 of purely spontaneous improvement. These were all from the 1914 epidemic. The conclusion from this small group is that the treatment of one set of muscles by muscle training has a stimulating effect on muscles not under treatment.

These facts may well give us courage to undertake a more vigorous treatment in late cases. Knowing that at the end of one year spontaneous improvement is by no means at an end, perhaps we may find that it extends much later than this when our observations have extended. These observations on the recuperative power in the affected structures and how long it lasts appear to be of much practical importance.

Recovery of Power in Total Paralysis.—The possibility of improvement in muscles totally paralyzed at the end of one year is also of much therapeutic importance. The following facts have been observed: Of forty-four totally paralyzed muscles at the end of one year, 48 per cent. (twenty-one) developed demonstrable power after two months of treatment. Of forty-four totally paralyzed muscles not receiving treatment, 27 per cent. (twelve) developed demonstrable power at the end of two months, which shows again that spontaneous improvement has by no means stopped at the end of a year.

An observation shows how great this improvement may be and how late it may be obtained. A patient affected in 1911 was under treatment for two months, beginning last July, by supervised home exercises. His unaffected muscles in this time gained 70 per cent., while his affected muscles gained this and 400 per cent. more (470 per cent.). These muscles were severely affected. This great gain at the end of four years by simple home exercises and the avoidance of fatigue is, it seems, most unexpected and encouraging.

TYPES OF THERAPEUTIC EXERCISE

The usefulness of the method in throwing light on the value of different treatments is illustrated by the following observation:

It was asserted by an English writer that the most helpful exercise in infantile paralysis was to pull

against the fully contracted muscle rather than to make resistance against the contracting muscle, technically that an eccentric exercise was physiologically more sound than a so-called concentric one. One observation showed that this advocated type of exercise was apparently harmful. A young girl with a moderately affected quadriceps muscle was given exercise of this newer type for two weeks, and lost 12.5 per cent. of power; the regular exercises were then given for four weeks with a development of 50 per cent. of power. It was not felt that it was proper to repeat this observation on other patients, so that it must remain only as an unproved suggestion.

OBSERVATIONS IN PRIVATE PRACTICE

The private patients under observation from the practice of one of us, some of whom have been under observation since June, 1914, offer good material for study, as being under the most continuous observation. Instances of the practical applicability of the method in these cases are as follows:

CASE 3.—A girl of 10 had been affected since 1906, and when she came for treatment in 1911 she showed a mild equinus deformity of the right foot. After various attempts to stretch this it was operated on in January, 1915, by tenotomy, but the child, although improved, still walked poorly. Eight months later, in October, 1915, a muscle test showed decided weakness of the thigh flexors and extensors and an increasing weakness in the dorsal flexors of the right foot, which were getting weaker as the plantar flexors increased in strength. In October, 1915, exercises addressed to these muscles were prescribed, although the child had previously been doing exercises. In six weeks the mother reported that the progress since October had been far greater than at any time in the affection, and that the child could now "skip" on one foot and used herself very differently than she had ever done before, and the lameness had become very much less. An arm weakness had also been identified by the muscle test, for which exercises had been given with much benefit, an instance in which greater precision of treatment had demonstrated its greater usefulness.

CASE 4.—A man of 22 was referred in the fourth week after his onset. He had involvement of the right leg and arm, walked with a limp and could not raise his right arm. The left arm appeared to be slightly weakened. Examination by the usual method showed extensive weakness in the left arm, very little power in the right deltoid, and a general involvement of the right leg. His right arm was put in a sling, he was cautioned against much walking and the use of the arm, and weekly muscle tests were made, showing a general slow gain, but no therapeutic exercises were allowed at first. At a test, October 4, an increase of 50 per cent. in the power of the right gastrocnemius muscle was observed, and on questioning it was found that he had been daily rising on his toes as a trial. This seemed to indicate that he was ready for therapeutic exercise, on which he then began with success. The test, October 26, showed a loss of 25 per cent. of power in the wrist and finger flexors of the right hand, and it was found on questioning that he had been writing too much. This was stopped, and on the following week a return of the former power was found in these muscles, an instance of the information afforded by the test in directing routine and defining treatment.

CASE 5.—A girl aged 8½, affected in 1913 with extensive paralysis of both legs, was walking with splints and crutches, and her muscle power was on the increase under daily muscle training. Nov. 18, 1915, there was a general loss of power in the legs. On questioning it was found that relatives had been visiting the family, and the child had been doing much more than usual, an instance of the deleterious effect of local and general fatigue.

These private patients are all tested at regular intervals, varying upward from one week, and it has been found that on the whole all are gaining in power and that the failure to gain in a special group or in general can be explained. Muscles gain and lose rapidly, a week often showing marked changes. As a rule, the muscles receiving the most attention gain fastest, and treatment is constantly to be modified in response to changes in the muscle readings. The more precise treatment is more satisfactory to those in charge of the case, and we believe of greater benefit to the patient.

CONCLUSION

No one realizes better than ourselves how very incomplete this report is, but we are not justified in making it otherwise. There has not been a sufficient interval since our first observations to warrant us in making sweeping assertions as to the value of different treatments. We have under way, however, a series of observations on the effect of the different therapeutic measures and on the effect of braces, and plaster of Paris in operative cases. These will in due time be presented, and meantime we only desire to call attention to a method of observation which we believe to be useful and to certain general conclusions which we believe to be sound.

ACTION OF PITUITARY EXTRACT

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In a recent article Shamoff[1] called attention to a generally unrecognized property of pituitary extracts. In various instances in which such extracts were applied to isolated segments of rabbit intestine, not the usual stimulation but a marked depression was noted. This was obtained from various preparations, but most constantly from a saline extract of gland substance desiccated in vacuo at room temperature. This result is in contradiction to the commonly held view that such extracts directly stimulate smooth muscle.

Recently as a class exercise in our laboratory, the effect of intravenous injections of extracts of pituitary gland on the intact small intestine was investigated. Dogs were anesthetized and the dorsal portion of the spinal cord destroyed. A segment of the intestine was immobilized (Trendelenburg technic), and a recording lever attached. In five cases out of six, a clean cut depression of tonus and peristalsis occurred. Commercial "pituitrin" was the extract used. In three instances saline extracts of old preparations of desiccated gland gave similar results.

In view of the frequent use of such extracts clinically as peristaltic stimulants, this depressant effect should be recognized. This inconstancy of behavior should be further investigated. The possibility is suggested that it may be correlated with some recent change in the process of preparing the extracts for market. In any case, each lot of the product should be tested by the manufacturer and its effect on peristalsis stated on the label of the container.

It is possible that the failure in some instances clinically to obtain the supposed diuretic effect from pituitary extract may have a similar explanation.

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1. Shamoff, V. N.: Concerning the Action of Various Pituitary Extracts on the Isolated Intestinal Loop, Am. Jour. Physiol., 1916, xxxix, 268.

AN UNUSUAL CASE OF MESENTERIC TRANSPLANTATION

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At operation a case will occasionally be encountered in which the ordinary methods of covering peritoneal defects prove unsuitable. Therefore a further practical experience should prove of interest to the profession. Even in the largest surgical clinic with which I am acquainted, the Eppendorfer Krankenhaus in Hamburg, Germany, during my three years' work there as assistant, no case presented itself in which the method to be described seemed indicated, nor have I seen one anywhere else.

In 1876 Tietze,[1] advised the use of omental grafts to reinforce end to end entero-anastomoses, to close small wounds on the stomach surface, and to cover necrotic patches which he had experimentally produced on the surface of the intestines.

Senn[2] in 1888 recorded his experiments showing that grafts of omentum applied to the bowel may retain their vitality, becoming adherent within eighteen hours, and are nourished with newly formed blood vessels within forty-eight hours.

Ammann,[3] I believe, also recommends the use of omental grafts for the same purpose. From experimental evidence he is convinced that almost any part of the peritoneum may be used in covering peritoneal defects. He advises the use of the sigmoid to close the open space between Douglas' sac and the bladder after hysterectomy whenever a simpler method of closure is not feasible.

A study of the literature shows that there are many suitable cases for the use of omental grafts and that although substantial differences of opinion prevail among authors concerning the danger of the formation of adhesions between the grafted organ and the adjacent peritoneal surface, the graft is generally considered a valuable means of protecting the abdominal cavity from intestinal leakage in cases in which an ideal Lembert suture cannot be made. Among the many articles on this general subject I have found no mention of the method to be described, and which seemed to me a valuable aid in an unusual and trying case.

REPORT OF CASE

History.—The patient was a single woman aged 35, whose chief complaint was a severe, chronic constipation. All symptoms seemed to be dependent on this trouble. She had had tenderness in the right iliac fossa for several years and several slight attacks of appendicitis. Through the very thick abdominal wall nothing definite could be palpated. The constipation was often accompanied by pain and tympanites. There was general lassitude with rapid and feeble heart action. Heart sounds were not clear, but there were no definite murmurs, though since childhood she had had severe attacks of rheumatic fever. There was a chronic bronchitis. Because of metrorrhagia she was operated on four years previously for a multiple uterine fibroid. Since then menstruation had been late and the flow scanty. The conditions to be described were probably overlooked at the former operation. Although the removal of the appendix had been advised, it was not removed because of the patient's bad condition during anesthesia.

Operation.—The abdomen was opened by a median hypogastric incision in the scar of the former operation. The cecum and proximal colon were not movable. The omentum was irregularly thickened and adherent to the abdominal wall and intestines. After prolonged search the appendix was found imbedded in a mass of omental and intestinal adhesions. It was excised with ligation and cauterization of the stump, an invagination not being feasible. On further search a very thick adhesion was encountered between the ileum and peritoneum over the right sacro-iliac synchondrosis and another one between two loops of small intestine. Finally, a Meckel's diverticulum was found attached to the free border of the ileum, with evident signs of chronic inflammation of its terminal portion yet floating free in the abdominal cavity.

The diverticulum was about three times as large as the normal appendix, with a very slight constriction at its intestinal attachment. It was determined to remove it as one would an appendix, so after clamping and ligating in the usual way, the stump was invaginated with a purse-string suture. When this was tied, it was found seriously to diminish the intestinal lumen so that an obstruction was to be feared. To avoid this complication, the purse-string suture was cut off and to cover the stump and the raw surface produced by the suture, I dissected a piece of the mesentery between two veins as large as a silver half dollar. This was sutured around its border with interrupted sutures covering the denuded area on the bowel, and so placed that the raw surface of the transplant was in contact with the defect on the intestine. A few sutures united the edges of the denuded area on the mesentery. The operation had then to be terminated because the patient's general condition had been bad throughout the anesthesia. The abdomen was closed without drainage. There was a slight rise of temperature following the operation, but nothing otherwise unusual throughout the following week. Bowels were moved on the third day with a saline cathartic. Recovery was uneventful and the patient was out of bed on the twelfth day.

I wish to emphasize that my method of covering the raw surface was quite different from the two usual methods, that is, suture of omentum to raw surface, and second, torsion of the gut on its long axis with suture to an attached flap of the mesentery. Both methods seemed to me liable to produce adhesions of this segment of gut in a patient in whom already the peritoneal surfaces were much altered and organs fixed. It seemed to me that a transplant rather than a flap of mesentery would offer the best method of surmounting the technical difficulties, and the postoperative course of the patient has confirmed this conclusion.

Let me add further that when I performed this operation I was not familiar with the work of the authors previously mentioned. I was, however, familiar with Tuffier's work on ovarian transplantation and Carrel's work on transplantation of the kidney in a dog.

The country in which I live is the smallest of American republics and is at the beginning both of its general and scientific development, and is distant from any medical center, so that medical and surgical progress must be rather slow for a time, at least. I hope that this case of successful transplantation of mesentery may be considered worthy of publication.

1. Tietze: Beitr. z. klin. Chir., 1876.
2. Senn, N.: Ann. Surg., 1888.
3. Ammann: Ztschr. f. Chir., 1906.

Sewage Disposal.—The Arkansas supreme court recently rendered a decision in a suit for damages for injury to property by the presence of a septic tank and drainage from it, which polluted a stream flowing through the plaintiff's land. The court held that the sewer district was liable for the amount by which the value of the plaintiff's land was depreciated by reason of the construction and operation of the septic tank, but that no damage could be recovered because of the acts of employees of the municipality in unnecessarily flushing the tank.—*Public Health Reports.*

DOUBLE INDUCED PNEUMOTHORAX

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Three forms of induced pneumothorax may be practiced:

1. Unilateral pneumothorax, the inflation of one pleura. This is the common form of the operation, and frequently establishes a cure even when both lungs are affected.

2. Alternate pneumothorax, the inflation of one pleura for a time, and then after the gas is absorbed, inflation of the opposite pleura. This method succeeds in some cases that are not cured by the first method.

3. Double pneumothorax, the inflation simultaneously of both pleurae. This, I think, is a new procedure. It is indicated only when threatening symptoms urge haste. Cases with active foci in both lungs, presenting long continued high fever with marked intoxication and the concomitant symptoms, when not responding soon to unilateral inflations, should be treated by double, or bilateral, inflations.

The rationale of double pneumothorax rests on the same data as does unilateral pneumothorax, and on the fact that animal experiments indicate that life is sustained by one sixth the normal lung area. Thus it appears that all of one lung and a part of the other may be obliterated without destroying life.

In doing double pneumothorax, hospital care is very desirable, but not indispensable, as illustrated by the cases reported below. Indeed, these cases show the practicability of doing double pneumothorax in ambulant cases.

REPORT OF CASES

CASE 1.—Miss M., aged 21, came to me after long sanatorium treatment with extensive bilateral involvement as determined by physical signs and by the roentgenograph. She was, however, quite stout, weighing 175 pounds, and had very little fever; but she was easily fatigued and was expectorating many tubercle bacilli. Two series of inflations were given.

During seventeen days, Oct. 4 to 21, 1913, eight inflations were given into the right pleural sac, varying in amount from 300 c.c. of nitrogen to 500 c.c. The resultant pressures were negative, touching neutral only once. During this period her weight dropped 6 pounds, and there was slight rise in the maximum daily temperature, from 98.8 to 99.5. There were many râles over both lungs, especially over the left. After a rest of fifteen days, inflations were begun on the other side, and inasmuch as four of the inflations on the first side were large (1,125 c.c., 1,500 c.c., 1,050 c.c. and the last one 1,050 c.c), I judge that there was still some gas in the right side when inflations were begun into the left side, although no roentgenograph was available.

The second series of inflations, given on the left side, covered eight months (Nov. 5, 1913, to July 2, 1915). Sixty-one inflations were given in amounts varying from 100 to 875 c.c, and complete compression was obtained with low positive intrapleural pressure. During the compression of this lung the right lung reexpanded fully. During this series, the weight dropped 20 pounds during the first six months, and then climbed back to 160. No treatments were given from June 6 to July 21, 1914, the patient resting at a mountain resort. While at the resort, the temperature remained normal. Repeated examinations of the sputum have failed to reveal tubercle bacilli at any time since Oct. 17, 1913, twenty-six months.

The inflations were stopped by the appearance of a left empyema with all the threatening accompaniments: high fever, chills, rapid pulse, anorexia, emaciation, vomiting and weakness. For a time the patient appeared moribund. Repeated aspirations of the pus, however, followed by air inflations and intrapleural injections of glycerin containing formaldehyd were followed by gradual recovery, so that now no fluid can be detected, the maximum daily temperature is below 100, the weight is rapidly increasing under an excellent appetite, and all symptoms have disappeared save a cough with a daily output of 3 ounces of clear, thin mucoid sputum, in which no tubercle bacilli can be found.

This case not only illustrates the practicability of bilateral pneumothorax treatment in ambulant cases, but incidentally indicates the value of the glycerin containing formaldehyd in treatment for empyema. While there was doubtless gas simultaneously in both pleurae for a short time, this case properly illustrates treatment by alternate induced pneumothorax.

CASE 2.—The following is a condensed account of the treatment of a tuberculous waitress, aged 22, by simultaneous inflation of both pleurae with nitrogen. Her family is clear of tuberculosis, but she had lived in an infected house. Her own history reveals an attack of "lung fever" at 7 years of age. Since then she has never felt well. Marriage at seventeen resulted in one living child and three voluntary abortions. Her present illness "began" two years ago with hemoptysis, cough, and tubercle bacilli in the sputum. During the last six months before she consulted me, she kept her bed with fever and weakness, but in November, 1912, she was able to come to the clinic, where the treatment was carried out. She appeared well nourished and intelligent. The physical examination, including roentgenograms, clearly showed advanced bilateral infection, and tubercle bacilli were abundant in the sputum. Two Wassermann examinations and the urine were negative. The blood pressure varied from 90 to 110. She presented a typical case of advanced pulmonary tuberculosis of both lungs.

For seven months she was given hygienic-dietetic and medicinal care with tuberculin. After twenty-five injections of the tuberculin, although the weight remained unchanged, pneumothorax was undertaken because of the extensive râles and continuous high temperature.

At first, thirty-six inflations of the left pleura were done, during a period of twenty-four weeks (May 28 to Nov. 22, 1913), varying in amount from 600 to 150 c.c. (In all inflations of this patient the resultant intrapleural pressures were either neutral or positive.) At the conclusion of this series of inflations, the patient felt stronger, and generally improved, but there was dyspnea on exertion. She had lost 4 pounds in the seven months, but fever had entirely disappeared. The left lung had been well compressed, as confirmed by roentgenoscopy.

One week later, with unabsorbed gas in the left pleura, inflations were begun into the right pleura and discontinued on the left side. Seven injections were given in nine weeks (from Nov. 29, 1913, to Jan. 17, 1914), in amounts varying from 850 to 300 c.c. During this series the temperature rose to a maximum daily ascent of 101. The weight dropped 3½ pounds more, the cough grew worse, and the amount of sputum was much increased. Toward the end of the nine weeks, it was noted that the first pneumothorax (left side) was being absorbed and the lung expanding. In the presence of the unfavorable course, it was decided to compress the left lung again. The apex beat was found in the fourth interspace just outside the nipple.

It is interesting to note that when the needle was thrust into the left pleural space the pressure was negative 8, and that after 100 c.c. had been introduced the pressure suddenly jumped to negative 16, and at the same time the patient complained of a sudden sharp pain in the chest. This I interpreted to mean the breaking away of new adhesions, allowing the lung to collapse. The reinflation of the left chest was begun after an interval of three weeks, when ten inflations were given in a period of nearly eleven weeks (Feb. 7 to April 27, 1914,) in amounts varying from 1,400 to 50 c.c. An unidentified acute infection occurred during this period with coryza, diarrhea and fever; but the general strength, appetite and sleep remained good, and there was a gain of 2 pounds. The left lung was fully compressed and the right partially.

After a week, the inflations of the right side were again resumed, and five inflations were given during the next seven and a half weeks (May 4 to June 29, 1914) in amounts varying from 250 to 100 c.c. Thus both lungs were simultaneously compressed, the left quite fully. During these weeks the patient gained 6 pounds.

After another week, inflations of the left side were resumed, twenty-two inflations being done during seventeen months (July 6, 1914 to Nov. 15, 1915) in amounts varying from 300 to 50 c.c. But during this series a momentous event occurred: the patient left town after the seventeenth inflation, and remained without treatment for seven months. On her return it was discovered that the lungs had both expanded fully, and that pleural adhesions, generally distributed, rendered the introduction of gas impossible in therapeutic amounts. She had lost 9½ pounds.

During the period between February, 1914, and January, 1915, while both lungs were simultaneously compressed, the patient resumed her best weight since under treatment, her temperature fell to normal, the amount of sputum dropped from 4 ounces to three-quarters ounce per twenty-four hours, tubercle bacilli were absent for many months, the blood pressure rose to 110, and her general health was distinctly improved.

This patient is still under observation, but penumothorax is, of course, impossible on account of general adhesions.

This case illustrates the advantage in some cases of bilateral treatment. It also illustrates the danger of inhibitory pleural adhesions forming when treatment is interrupted for too long a time.

CASE 3.—A, man, aged 22, presented complete bilateral involvement with adhesions. The case was seriously complicated by chronic alcoholism with acute alcoholic exacerbations. The patient was partially intoxicated at many treatments, and had alcoholic tremor for many days at a time.

From Oct. 24 to Dec. 15, 1915, about seven weeks, he received thirteen injections into the right side in amounts varying from 250 to 1,200 c.c., resulting in positive intrapleural pressures varying from positive 1 to positive 34 c.c. water, the high pressures being due to pockets in the pleural adhesions. His maximum daily temperature varied from 99 to 100.6. From Dec. 15, 1913, to Jan. 5, 1914, a period of about twenty-one days, he received six simultaneous bilateral inflations, the amounts varying from 100 to 300 c.c. of nitrogen. The resulting intrapleural pressures varied from negative 4 to positive 1 on the left side, and from positive 10 to positive 24 on the right side. The simultaneous inflations are indicated in the accompanying tabulation.

SIMULTANEOUS INFLATIONS IN CASE 3

	Right c.c.	Left c.c.
Dec. 15, 1913	125	225
Dec. 17, 1913	100	100
Dec. 20, 1913	100	300
Dec. 24, 1913	175	300
Dec. 31, 1913	300	200
Jan. 5, 1914	125	250

In February, 1914, this man went to the mountains where he was controlled by an old woman who stopped his liquor, whereupon he gained greatly in every way and grew quite fat. After twenty-one months, he returned to town, resumed liquor, and died shortly after a surgeon removed an infected toenail.

CASE 4.—H. M., a schoolboy, aged 8, with total involvement of both lungs, expectorating a large quantity of necrotic-smelling pus (lung abscess ?) containing no tubercle bacilli or streptothrix on repeated examinations, received in all twenty-nine inflations, fifteen into the right pleura, nine into the left, and then five again into the right as follows:

During a period of fifty-eight days (from Nov. 29, 1913, to Jan. 21, 1914) fifteen inflations were given in the right side varying in amount from 100 to 700 c.c. of nitrogen, producing intrathoracic pressures varying from —2 to + 4 c.c. water. Complete compression of the right lung was accomplished. There was slight rise of temperature, but it finally returned to normal. The sputum was reduced, 4 ounces to 1 ounce per twenty-four hours. Marked general improvement, expressed especially in appetite, endurance, sleep, etc., was noted, but the weight fell 2½ pounds. The sputum, formerly necrotic pus, became much cleaner and nearly free from odor.

After ten days' interval, with gas still present in the right pleura, inflations were begun on the opposite side. During a period of forty-three days (from Jan. 21, 1914, to March 7, 1914) he received nine inflations on the left side, varying in amount from 150 to 500 c.c. nitrogen, resulting in pressures from — 4 to — 2. After some of the inflations there was much dyspnea. During this series, the sputum increased to 4 ounces in twenty-four hours, the temperature after a temporary rise returned to normal, the sputum lost much of its necrotic odor, and there was a loss of weight of 1 pound.

After an interval of twenty-four days, inflations were again given on the original side—the right. During a period of twenty-five days (from May 1, 1914, to May 25, 1914) five inflations were given, varying in amount from 50 to 400 c.c. nitrogen, producing intrathoracic pressures from + 14 to + 20. The sputum fell from 8 to 6 ounces per twenty-four hours, the temperature remained constantly normal, and 3 pounds increase in weight was recorded. The weight was then only 1 pound lower than the original weight, Nov. 20, 1913. June 5, 1914, adhesions negated an attempted inflation. The patient then failed to return.

At this writing, now two years since treatment, the boy is still alive and fairly well. The sputum is again profuse and has a strongly necrotic odor. Though the bacillus was not found in this case, the report is included in a group of tuberculous cases because the streptothrix was absent, and because the patient's sister yielded the bacilli, and because his father is a long sufferer from hard cough and free expectoration and appears clinically tuberculous (though his sputum has not yielded tubercle bacilli).

The case illustrates the practicability of double pneumothorax in an ambulant child.

CONGENITAL ANTERIOR CURVATURE OF THE SPINE

REPORT OF CASE *

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History.—J. L., girl, aged 4 months, was brought to the clinic at the age of 3 weeks for bowing of the left thigh. The patient is the first child. The delivery was very difficult, by breech presentation and accompanied by considerable injury of both thighs. The left femur was fractured and healed with moderate deformity. For ten days following birth, the child did not move either lower limb. A few days before the child's first visit to us, the mother noticed, in addition to the bowing of the left thigh, that the back was very hollow, the abdomen very prominent and usually tense. The child nursed regularly, its bowels moved several times daily, the stools being normal in color and consistency, and excepting for being unusually quiet, seemed quite well.

The family history was negative.

Examination.—The child was well nourished, rather fat, with an extremely prominent abdomen and marked lordosis. She appeared to be most comfortable lying on her side, and when placed on her back rolled over to one or the other side. The anteroposterior curve of the spine was normal in the cervical and dorsal regions, but markedly exaggerated in the lumbar region, being most marked at the lumbosacral junction. The lordosis was resistant, and allowed of only slight correction by manipulation; it was slightly diminished in the dorsal position, and was most noticeable when the child lay on her side. There was no sensitiveness of the back, and the motions of the spine were free in all directions excepting flexion, which was decidedly restricted. There

* From the clinic of Dr. Royal Whitman at the New York Hospital for Ruptured and Crippled.

were four deep transverse grooves or folds in the skin of the lumbar region. The roentgenogram, which was unusually clear, showed a normal conformation of the spine excepting in the lower lumbar section, where there was a sharp curve forward or extreme hyperextension. The lateral view showed definitely that the individual vertebrae were normal in outline and that there was no luxation of any vertebrae or spondylolisthesis. A roentgenogram of the gastro-intestinal tract showed that region to be entirely negative. There was no spina bifida or other congenital malformation. The other joints were normal, particularly the hips, which were carefully investigated for any possible contracture or dislocation. There was, however, limitation to hyperextension of the hips. There was moderate outward bowing due to the fracture at birth of the left thigh. The abdomen was large and tense. The liver was felt several fingers' breadths below the free costal border. There was no other mass to be felt. Very slight pressure on the abdomen produced discomfort. The abdomen had on a few occasions been observed to be quite flaccid and much smaller in size, but at no times did the anterior curvature of the spine seem reduced. In the belief that the apparent distention of the abdomen might have something to do with the curvature of the spine, rectal tubes were inserted. Each time the child was relieved of considerable flatus, but on no occasion was the size of the abdomen or the condition of the spine altered. The urine, examined on two occasions, showed no albumin. A neurologic examination made by Dr. William Sharpe was reported to be negative.

Anterior curvature of the lumbar spine, or lordosis, is either primary, that is, congenital, or secondary. There was no condition present in this child such as contracture at the hips, congenital dislocation of the hip, etc., to which the lordosis might be a sequel, and as the condition was observed in the first few weeks of life and was then very resistant, we are warranted in considering this a genuine congenital deformity.

A review of the English literature reveals only scant reference to it. There is no mention of this condition in the *Transactions of the American Orthopedic Association* from 1890 up to date. Dr. Royal Whitman[1] says of this lesion, "It is not a simple postural deformity but it is usually secondary to disease or deformity either of the spine or adjoining members." Bradford and Lovett, and other modern writers similarly refer to this condition only as secondary to other deformities or lesions.

A few of the older authors, however, do speak of anterior curvature of the spine as a primary congenital lesion. Adams, in his "Lectures on Curvature of the Spine," says, "In the lumbar region, it is found as a peculiarity in the natural conformation of the individual, often existing in several members of the same family and hereditary." Brodhurst, in his book on "Curvatures of the Spine," says that anterior curvature of the spine may be congenital, and as such an affection it is combined with monstrosity and with spina bifida.

In our case, it would appear that there can be no doubt that the lesion is not secondary to any other condition and that it was present at birth.

CONCLUSIONS

1. This is a genuine instance of congenital lordosis or anterior curvature of the spine.
2. Heredity plays no rôle in this patient, as no member of either branch of the family has a like condition.
3. Despite the marked lordosis, there is no albuminuria.

1 West Eighty-Fifth Street.

1. Whitman, Royal: Orthopedic Surgery, Ed. 4, Philadelphia, Lea & Febiger, 1910.

A CASE OF SPONTANEOUS RUPTURE OF THE MALARIAL SPLEEN

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History.—C. W. entered the Twenty-Third General Hospital, British Expeditionary Force, France, with the following history: He had had no special illness during childhood, and no history of any specific infections. He went to India the latter part of February, 1912. He was perfectly well until some time in August of the same year, when he was taken suddenly ill with cramps over the entire abdomen, followed a few hours later by an attack of dysentery. He had no nausea or vomiting. After forty-eight hours he was admitted to the hospital, where he remained for two weeks.

For the first twenty-four hours he was on the bed pan continuously. The stools were of a bloody mucous character. After treatment was instituted, the patient began gradually to improve, and at the end of two weeks he made an apparent recovery. During this time he lost considerably in weight. After being up for one week he was taken suddenly with chills, which gradually grew worse, and would last from five to fifteen minutes. The chills came on regularly, one slight chill during the day and a severe chill during the night. After two days of treatment the chills disappeared, and in three weeks the patient was discharged from the hospital. After his discharge he went back to his battery, and was perfectly well until October, 1914, when he returned to England. While on board the transport he was again taken sick with chills and fever. Treatment was immediately instituted and he made an apparent recovery in a few days. After landing he was taken with vomiting, which was very severe and lasted for two days. He had no pain, dysentery, or fever. After the vomiting ceased he felt well again, and began to gain in weight until May 8, 1915. While at the front in France, after a severe bombardment, he was taken sick with some nervous trouble, which lasted for a few days. He had several of these attacks, and was finally sent to the convalescent camp, where he remained for two weeks, making a complete recovery. After returning to his battery he was in the trenches until Aug. 13, 1915. There is no history of his having suffered any injury.

Aug. 13, 1915, he was taken sick with chills and fever, headache, malaise and pains in his abdomen and chest. This lasted for three days, when he was admitted to the casualty clearing station. After being put to bed and treated, he began to feel better. His temperature and pulse were normal. He remained here for six days, when he was removed to the Twenty-Third General Hospital. While on the train he was taken with severe pains in the epigastric region, which finally extended over the entire abdomen. On arrival at the hospital, his temperature was 97, pulse 70, respirations 18.

Physical Examination.—The patient was emaciated, the skin flabby, and he appeared anemic. His respirations were slow, but shallow. The excursions of his right chest were not so great as those of the left. On percussion a dull area was made out over the lower right side of the chest extending as high as a line drawn from half an inch above the nipple through to the back. The vocal fremitus was decreased over the area, and the breath sounds were diminished on auscultation, but not entirely absent. Breath sounds were normal above this dulness. The left side of the chest showed normal breath sounds, although it was hyperresonant on percussion. The heart's dulness was crowded to the left of the nipple line, and the apex beat was 1 inch to the left of the nipple line in the fourth interspace.

The abdomen was slightly distended but soft, and there was no muscular rigidity. The patient was very tender over the region of the gallbladder, especially toward the epigastric area. There was some tenderness over the appendix region.

While in the Twenty-Third General Hospital, the patient suffered from acute attacks of pain simulating gallstone colic.

The pain, however, extended to the left upper hypochondriac region. He suffered three or four attacks daily. The temperature ranged from 101 to 102. August 25 he had a slight chill, the pulse varying from 80 to 102, and the respirations from 18 to 22. He complained of no pain in the chest. During the night of August 25, he had a very severe attack of pain in the epigastrium, his temperature dropped to 97.4, and his pulse rose to 120, and respirations to 26. The patient was in collapse. An examination of the blood showed a leukocyte count of 10,500 with 55 per cent. of polymorphonuclears, 40 per cent. of small mononuclears and 5 per cent. of large mononuclears. No plasmodia were found.

Operation.—On the following morning an exploratory laparotomy was done. Under ether anesthesia, the abdomen was opened in the right upper quadrant through a rectus incision, and a large amount of old clotted blood appeared, and also a considerable amount of dark fluid blood. The liver was slightly enlarged and of normal consistency. There were adhesions between the parietal peritoneum and the liver, and also adhesions of the omentum to the liver. The gallbladder was easily emptied, and no stones were felt.

The stomach was congested, but otherwise normal. The spleen was enlarged and quite soft. The omentum was firmly adherent to the convex surface of the spleen. The adhesions between the omentum and the spleen were not broken up.

The pancreas was normal; a few mesenteric glands were enlarged. The appendix was firmly wrapped with omentum and was club-shaped. The omentum was adherent to the intestine, and was infiltrated with dark blood forming hemorrhagic areas. The appendix was removed. No localized point of hemorrhage was found.

A drain was inserted through a punctured wound in the right iliac fossa, and another inserted through the upper wound. The patient was returned to the ward in a fair condition. He improved until August 31, when his temperature suddenly rose to 105, pulse 120, and respirations 40.

On examination, his abdomen was found to be soft, and the wounds in good condition; there was no tympanites. Examination of the chest showed a consolidation in the middle and lower lobe of the right side over which bronchial breathing and râles were heard. The vocal fremitus was increased.

Diagnosis of "lobar pneumonia" was made. The patient had his crisis on the seventh day, when his temperature remained normal for two days.

Then he began to have daily chills and elevations of temperature. An examination of the blood showed the malarial plasmodium. Quinin was given. From that time on he made an uneventful recovery—his wounds healed slowly, and he was discharged to England September 26, with a small sinus still persisting in both incisions.

Diagnosis.—A positive diagnosis of the origin of the hemorrhage was not made at the time of the operation, although the various causes of interabdominal hemorrhage were considered, as hemorrhagic pancreatitis, ruptured spleen, etc. Exploration failed to reveal any apparent cause for the hemorrhage, except from the enlarged soft spleen with the adhesions of the omentum to the convexity of the organ. These were not broken up, as they were already effectually checking any hemorrhage that might have come from this source. Malaria was considered at this time on account of the previous history, but an examination of the blood previous to operation did not reveal the malarial organism, nor did the smears taken from the free blood in the abdominal cavity reveal any organism.

But the chills and fever and the finding of the plasmodium during the convalescence of the patient make a diagnosis of malaria certain. This, when taken into consideration with the attack of severe epigastric pain while the patient was en route to the hospital, and the subnormal temperature on the day of admission, and again the *attack of pain* two days later with a drop in temperature and collapse, and the negative findings of the abdominal organs at the time of operation with the exception of the spleen, make it evident that we were dealing with a case of malaria complicated by a spontaneous rupture of the spleen.

REPORT OF TWO HAY-FEVER CASES TREATED WITH THE POLLEN EXTRACT

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CASE 1.—Child, aged 11, came, Aug. 20, 1915, for treatment for relief from hay-fever symptoms. There was a history of one similar attack the previous season. Family history was negative. The child was not of strong physique, but physical examination showed no special defect except anemia. Nasal examination revealed the anterior ends of the inferior turbinates puffy and covered with a thin watery discharge, causing complete obstruction. The symptoms were sneezing, a constant watery secretion from nose and eyes, dark circles under the eyes, itching mucous membranes and insomnia. The mother was advised to send the child away, which was done, but no good resulted from it.

September 10, the ragweed and goldenrod pollen skin reaction was tried. There was a severe reaction to both. Two days later the ragweed pollen extract in a weak solution was given by hypodermic, according to the technic of J. L. Goodale (Pollen Therapy in Hay Fever, *Boston Med. and Surg. Jour.*, July 8, 1915). For two days there was a local swelling and a tenderness at the point of injection, as well as a swelling of the whole arm from elbow to shoulder. The hay-fever symptoms disappeared, and there was no return, so there was no necessity of repeating the treatment.

CASE 2.—E. F., man, aged 21, referred for hay-fever treatment, July 27, 1915, had had hay-fever attacks of severe nature occurring each year beginning about the middle of August. A college roommate who also had hay-fever told him that he had been cured by vaccine treatment, and the patient wished to try it. The family history was negative. The present condition was excellent; the patient was well developed and athletic. Nasal examination made the last of July was negative except for a slight fulness and watery discharge which had been of a few days' duration. The throat and pharynx were in good condition.

A culture was taken from the nose and throat for autogenous vaccine. The growth contained staphylococci and a few pneumococci. During the first two weeks of August four vaccine treatments were given. The slight congestion and the watery discharge disappeared after the first treatment. At the time when hay-fever symptoms were expected, the patient, following his usual custom, left his home in Connecticut for New Brunswick where he had never been troubled, but because of business returned in two weeks. On reaching Boston, August 27, the symptoms began, sneezing, itching mucous membrane, watery discharge from nose, and insomnia, with increasing severity. Three vaccine treatments were given, one each on August 31, and September 3 and 9; on the latter date the ragweed and goldenrod pollen extract skin reactions were tested on the arm. Both reacted, but ragweed more, giving a good-sized white welt surrounded by an erythema about the size of a half-dollar.

September 14, the ragweed pollen extract in weak solution was injected by hypodermic. That night there was a severe reaction, asthmatic in nature. The local reaction was also severe, the arm swelling from elbow to shoulder. The asthma and local symptoms subsided in three days. Nasal examination revealed only one of the hay-fever symptoms remaining, a slight congestion of the inferior turbinates with lack of perfectly free breathing space through the nose. No further treatment was given and there was no return of the symptoms.

103 St. James Avenue.

A Governmental Function.—No one, in a free country, can force a diseased individual to seek effective treatment or prevent him from using an ineffective treatment, unless his disease imperils the health of others. At that point, and not before, the government can and should take personal measures. However, it is a well recognized function of the government to protect individuals against their own ignorance. It does this when it forces the child to go to school; it does this when it places the swindler in jail.—Editorial in *Cleveland Med. Jour.*

PAPER CLIP IN BRONCHUS SEVENTEEN YEARS REMOVED BY SUPERIOR BRONCHOSCOPY*

EDWIN BEER, M.D., NEW YORK

During the past seventeen years numerous cases of foreign bodies removed from the bronchus by either the superior (laryngeal) or inferior (tracheal) route have been recorded. The following case is placed on record because of the long interval[1] between aspiration and removal, and to emphasize the fact that even after remaining so long in situ, its removal was not difficult.

History.—M. K., aged 26, was admitted July 1, 1915, and discharged July 19, 1915.

Present Illness.—Seventeen years ago the patient was playing with a paper clip which he had put into his mouth, when it suddenly became lodged far back in his mouth near the base of his tongue. His father, with the use of an ordinary teaspoon, made an attempt to remove the clip, but unfortunately pushed it still farther down the patient's throat. The patient felt much better and did not notice any particular distress, and his parents believed that he had swallowed the clip. He was given castor oil. The next day, while the patient was playing in the street, he was suddenly seized with a paroxysm of coughing and raised a large quantity of mucus mixed with blood; also he had great difficulty in breathing.

He was taken to a hopsital where he was placed under observation for a period of one week. After being put to bed his symptoms disappeared and he was finally discharged without any attempt being made to recover the paper clip.

After being home for a few days he was taken suddenly very ill and his physician said he had pneumonia. He was sick at this time for about six weeks, having had what the physician called a relapse from which he finally made an uneventful recovery. He then enjoyed fairly good health for about two years, when he noticed a dull aching pain in the right side of his chest and complained of a hacking cough, with the expectoration of large quantities of mucopurulent sputum, marked shortness of breath and a sense of oppression and suffocation. Thinking that he was beginning to have some lung disease he consulted his physician. He says he was first told he had tuberculosis, and that he must go back for a second examination after a certain period. This he did, and was told he had bronchial asthma. He states that he received treatment for this for about twelve years at several institutions and from various physicians. During this time he coughed more, the sputum became very offensive and foul smelling, his pain and sense of suffocation increased and he became exhausted on the slightest exertion, finally having to give up his work entirely. His weight, however, did not decrease with increase of his symptoms. His appetite was always good. Not being able to work, he gave up all hope and came to Bellevue Hospital believing that he had tuberculosis. On being questioned, he told of the paper clip he had had in his mouth seventeen years before and of the treatment he received since that time. He was admitted to the hospital for Roentgen-ray examination, July 1, 1915.

Examination.—Roentgen-ray examination[2] showed a distinct shadow of a flat-headed paper clip in the right main bronchus, with head down. It also showed marked thickening of the adjacent pulmonary tissue.

Operation.—July 15, 1915, superior bronchoscopy was performed and the clip removed under combined ether and cocain anesthesia. Cocain and epinephrin were applied in the right bronchus to control reflexes and ether insufflation (intratracheal) through a metal catheter in the bronchoscope kept the patient thoroughly anesthetized. The clip was embedded in the granulation tissue which almost filled the bronchial lumen, and there was copious discharge during the manipulations. As soon as one leg of the clip was seen it was firmly grasped with forceps and the clip withdrawn with the bronchoscopic tube (Jackson-Rochester). In withdrawing the clip the two legs became spread apart, one entering the tube and the other trailing after.

Subsequent Course.—July 17, 1915, there was very little febrile reaction. At first expectoration ceased almost entirely, then it became more copious, and then gradually diminished in amount.

July 19, 1915, the patient was discharged feeling well.

Nov. 10, 1915, the patient was shown before the New York Surgical Society in excellent condition. A recent roentgenogram showed marked improvement in the pulmonary condition, though considerable thickening was still present. The patient still had a moderate cough and some expectoration, undoubtedly due to the bronchiectasis that had developed from the paper clip remaining in situ for seventeen years.

48 West Seventy-Fourth Street.

* From the Bellevue Hospital, Fourth Surgical Division.

1. Jackson, C. (Ann. Otol., Rhinol. and Laryngol., June, 1913) reports a remarkable case in which he removed a collar button twenty-six years after aspiration. I believe this and the case here reported represent the longest periods between aspiration and extraction.

2. By Dr. Hirsh, Bellevue Roentgen-ray laboratory.

REPORT OF A CASE OF TETANUS, WITH COMPLICATIONS

J. S. GAUMER, M.D., FAIRFIELD, IOWA

Nov. 23, 1915, H. H., man, aged 23 years, ran a splinter from a barnyard gate into the back of the second phalanx of the middle finger of the right hand. The splinter was deeply embedded alongside the bone and was removed five days later. November 30, one week after the initial injury, the patient felt a slight stiffness in his jaws and some pain in his back.

December 1, he consulted me and at once entered the Jefferson County Hospital. Within a few hours, he received 9,000 units of antitetanic serum, 6,000 units intravenously and the other 3,000 units subcutaneously. The wound in the finger was opened freely and cauterized thoroughly. His temperature on entrance to the hospital was 99.4.

On the following day, December 2, the patient received 15,000 units of antitetanic serum, December 3, 18,000 units, December 4, 9,000 units, and December 5, 3,000 units, all given subcutaneously. During this time his temperature had steadily increased to above 104, with the other symptoms of tetanus steadily increasing in severity, the jaws set, opisthotonos, jerking of the muscles of the back, and pain in the abdomen, with some delirium. He was able to take fluids freely through a drinking tube. During this time in addition to the antitetanic serum, he was given morphin sufficient to control the pain, with chloral in 40 grain doses by rectum, repeated when considered necessary. During the forenoon of December 6, he had a severe convulsion. Immediately following this, he was given morphin, one-half grain, with atropin, 1/150 grain, hypodermically, and received 3,000 units of serum in the spinal canal.

As the wound in the finger continued to have pus in it in spite of repeated cauterization and wet dressings kept constantly hot, it was thought that there might still be an incubation of tetanus bacilli in the wound; therefore the finger was amputated, the head of the metacarpal bone being removed, the end of the wound being left open with hot moist dressings continued.

On the following day, December 8, the patient's temperature continued to increase, reaching 105.2, when he received 6,000 units of serum in the spinal canal. Early the following morning the temperature reached 105.8, and then subsided, December 9, to 102.2. The symptoms of tetanus began to show improvement; there was less stiffness and opisthotonos, and less sedatives were needed. December 10 and 11 the temperature increased again, and the patient was continually delirious. December 11, his temperature reached 105.4, and during the afternoon of this day the tympani of both ears ruptured and the ears began to discharge freely. His delirious condition had been such that he had not said anything to his attendants about having pain in the ears. It was

now hoped that his condition would improve; but about twenty-four hours later the wound in his hand began to show signs of inflammation, notwithstanding the fact that it had free drainage, and hot moist dressings had been kept up.

December 15, the temperature again reached 105.6, and then subsided, as the hand began to show improvement. The tetanus symptoms gradually improved, and, December 24, the temperature reached normal. The otitis media improved gradually, and the amputation wound healed so that the patient was able to leave the hospital, entirely recovered, Jan. 10, 1916.

The interesting features of this case are: the short period of incubation, which statistics show produces the most serious prognosis; the fact that the patient had only one convulsion, although all the other symptoms of the tetanus were severe; the extremely high temperature at the height of the tetanus, the otitis media, and the infection in the hand, and the unusual complications and recovery, notwithstanding the latter.

The patient received in all, 63,000 units of antitetanic serum, massive doses of morphin, chloral by rectum, which usually had a decided sedative effect producing the much needed sleep, and also bromids by mouth.

I believe that the most decided effect of the antitetanic serum followed the intraspinal administration, although the immediate reaction seemed to produce a hyperpyrexia.

Therapeutics

BACKACHE

The therapy of backache may belong to the domain of the neurologist, the surgeon, the gynecologist or the genito-urinologist. Backache is a common symptom of innumerable disorders. It can be treated rationally only after the correct diagnosis is made. Unless this is done, any improvement resulting from the treatment is similar to that following any hit-or-miss therapeusis.

By backache is usually meant lumbar pain beginning at the region of the first lumbar vertebra and extending downward, often to the sacral and coccygeal regions. The pain may be in the center of the back, along the spine, or on either one or both sides of the spine.

Often the clue to the real cause of the pain may be obtained by careful questioning. The duration and nature of the pain, its exact location, whether in the center or to one or both sides of the spine, are all of importance. It is essential to know whether or not the pain is associated with fever; has followed a convalescence from some infection; is associated with pain on urination or with changes in the appearance of the urine; has followed a sudden strain; is aggravated by bending the body in any direction, or has any relationship to menstrual or uterine disturbances.

After a careful history of the patient has been recorded, a thorough physical examination is essential in the search for the etiologic factor in the backache. On account of the large number of varied causes, treatment without examination is generally guesswork. The best way to examine the patient is to remove his clothing, and to observe him first in the standing position, noting whether or not the body is flexed to one side or the other, or more weight is placed on one leg than on the other. The presence of any abnormal curvatures or deformities of the spine, or any enteroptosis should be noted. In palpating, points of tenderness should be sought over the spinous processes of the vertebrae, and the presence of ptosed or enlarged abdominal organs should be noted. In women a vaginal examination is essential for the detection of any abnormal uterine conditions, such as marked retroversion or tumors of the uterus, or any pelvic exudates or abnormalities. The patient should flex the body in various directions while in a standing position and should be requested to flex and extend the thighs on the abdomen while lying on his back, that the freedom of these motions and the amount of pain they cause may be noted.

Roentgen ray examination of the spine will often be of service in revealing thickening or ankylosis of the vertebral joints or rarefaction of the bodies of the vertebrae. It will also aid in helping to exclude renal or ureteral calculi. Finally, the temperature and urinary findings may aid in deciding the cause of the trouble.

The causes of backache may be divided into groups:

BACKACHE DUE TO STRAIN OR LACK OF BALANCE

By far the greatest number of backaches belong to the fatigue and lack of balance group. This group has been described by Reynolds and Lovett[1] as due to loss of balance, when an unusual strain is placed on the lumbosacral tissues and the muscles of this region. The strain may be produced by posture, by poor muscular balance and by abnormal conditions within the abdomen, such as enlargement of the organs, enteroptosis and obesity. The fatigue may result from an attitude constantly assumed in some form of occupation, such as stooping, bending, or lifting heavy objects.

Those backaches resulting from changes in muscular balance due to uncorrected broken or fallen arches of the feet, or to the continuous use of poorly fitting shoes, are also placed in this group. The pain in these cases often extends up the lower extremities to the back. From a faulty tread, the muscles of the leg, thigh and lower part of the body may be strained and become painful, and even the knee joint or hip joint may be strained by the lack of balance. A careful examination of the shoes, feet, and posture on standing and walking, and an investigation of the kind of work or the kind of strain to which the patient is subjected, will generally disclose the physical cause and the consequent treatment of this kind of backache.

As a result of the constant backache or frequent attacks of backache, there may come a time when, in the highly neurotic individual, the mind is frequently concentrated on the back, and as a result pains will be present without any cause. Associated with this may be other symptoms, such as perverted heat and cold sensations, an abnormal state of the reflexes indicating a neurasthenic tendency. This condition has been termed "hysterical spine" or, after railway accidents, "railway spine."

The treatment of this form of backache will tax the energies of the therapeutist. No definite rules can be laid down, except that all other possible causes of the backache must be excluded before a diagnosis of hysterical or railway spine is made. In these cases, treatment should be mainly general, and should be based on efforts to relieve and cure the neurotic condition of the patient. Local treatment is generally only of psychic value, but for that reason alone is essential. In local treatment, use may be made of electricity,

1. Reynolds, Edward, and Lovett, R. W.: An Experimental Study of Certain Phases of Chronic Backache, The Journal A. M. A., March 26, 1910, p. 1033.

vibrations, electric light heat, spinal douches, or other hydrotherapeutic measures, and even at times the thermocautery will be found of value. Hypodermic injections of water into the painful regions may be efficient. The general treatment calls for increased feeding, general massage, and regulated exercise, with periods of rest. Occasionally, tonics may be indicated.

BACKACHE DUE TO INFLAMMATION OF NERVES

To this type of backache belong those due to affections of the nerves or to affections of the posterior nerve roots with their nerves. This includes neuritis, simple or part of a multiple neuritis, resulting from alcoholism, lead or diabetes. Removal and elimination from the system of the alcohol or lead is the first aim of treatment in the first two instances, and the pain will be ameliorated by proper diet in the case of diabetic neuritis.

The acute pain of the neuritis must be stopped, and if local sedatives, as heat, rest and support by straps or otherwise, do not give immediate relief, a drug sedative must be given, with the full recognition of the probable prolonged or recurrent backache being likely to cause repeated need for the narcotic, and hence the danger of the formation of a drug habit. Occasionally the pain is so severe that morphin with atropin must be given; the latter dulls the endings of the peripheral nerves. If the pain is not so severe, or if it is modified by one or two hypodermics, then large doses of sodium salicylate may be tried, as 1 gm. once in four hours for a few doses. In some instances large doses of quinin may be efficient, as 0.4 gm. three times a day for a few doses. If either a salicylic preparation or quinin is pushed to physiologic effect, a bromid should be given synchronously to prevent the uncomfortable salicylism or cinchonism, respectively. Five-tenths gm. of sodium bromid may be given for each gram of salicylic acid, and 1.2 gm. of sodium bromid for each 0.4 gm. of quinin. When there is insomnia without severe pain, chloral in doses of from 0.5 to 0.6 gm. may be given at bedtime. Sodium diethylbarbiturate (veronal-sodium) in doses of 0.3 gm. may be given for sleep, if there is no severe pain. Locally to the back, gentle high frequency electric currents may be tried, or the arc lamp treatment, with later dry cupping, and perhaps the thermocautery.

In posterior ganglionitis with herpes, if there is considerable pain, the treatment may be much the same as in simple neuritis. If the pain is not too severe, a narcotic is not needed. Generally rest and soothing powders and absorbent cotton placed over the eruption, with supporting adhesive straps to limit motion, markedly ease the pain.

BACKACHE DUE TO INFECTION

A large number of backaches are due to changes in the bodies of the vertebra or in the intervertebral joints. When the joints are involved, the pain may be due to an acute infectious arthritis or to chronic hypertrophic arthritis (ostearthritis). These are both associated with a primary focus elsewhere; the acute condition may be part of an acute infection, such as acute follicular tonsillitis, pneumonia, gonorrhea or influenza. When these causes are present there will also be symptoms of the primary infection, such as more or less increased temperature. The involved portion of the spine may be exceedingly tender. Generally this kind of backache disappears with the subsidence of the primary infection.

Hypertrophic arthritis (ostearthritis) is a slowly developing process, often lasting several years and resulting in a thickening, and sometimes in a union of the vertebrae and cartilages. It is caused by a constant source of infection, the commonest being repeated tonsillar infections, pyorrhea alveolaris and chronic gonorrhea. It may be associated with an arthritis deformans of the extremities. The diagnosis is assisted by Roentgen examinations of the spine.

The treatment consists in removal of the primary source of infection, if it can be located. Large hypertrophied tonsils should be removed, and alveolar pyorrhea should be treated. An abscess in or around the roots of the teeth should be sought by means of roentgenograms, and if an infected tooth is found it should be removed or properly treated.

If there is any history of a former venereal infection, in the male, a careful examination should be made of the deeper urethra, the prostate and the associated organs, and any part found infected should receive proper treatment.

Vaccines have sometimes been found of value, especially when they have been prepared from organisms isolated from a primary focus. Until the source of infection is eradicated, local treatment of the back is discouraging, although some relief from the pain may be given by applications of heat, counterirritation and strapping.

Two common causes of infection of the bodies of the vertebrae are tuberculosis and typhoid fever. In tuberculosis the backache first manifests itself when the destruction has progressed to such an extent that a gibbus, or bending, of the spine has resulted, and with it pressure on the nerves has occurred. In the treatment of this condition, spinal support and spinal rest, as furnished by a brace or a plaster cast, should be used. Later, after the disease has become quiescent, the destroyed bone tissue may be successfully repaired by plastic bone surgery.

The so-called typhoid spine occasionally develops after convalescence from typhoid fever. The pain is localized, and may become severe. It does not produce angulation and the deformities characteristic of tuberculous involvement of the spine. The spine is rigid and very tender, and there is always more or less fever. The condition is, as a rule, self-limited, and with proper rest and simple local and general measures, usually results in recovery.

(To be continued)

The Elimination of Quackery and Isms

This is a division of our work that must come to the front; not only the patent medicine faker but the many cults and isms that lead people astray, must be censored and combated. The entrusting of human lives and welfare, must *only be* to *such* men and methods who show that they have spent the adequate time and effort that will enable them to judge conditions in the light of modern science. No man with a correspondence school knowledge of the principles of medicine, with perhaps hardly a grammar school education, should be allowed to pronounce questions of diagnosis and treatment. Even a six or nine months' special study of some principle of medical science elaborated into a system or cult is not sufficient. We should endeavor to have anyone who interrogates the human system obtain as thorough a knowledge of that system as modern science can give and then with light of this, if he conscientiously sees fit to multiply the value of some single therapeutic measure, he can at least calculate its limitations.—From "Correlative Factors in the Tuberculosis Campaign," by Dr. Arthur F. Fisher, in *Journal of Outdoor Life*, January, 1916.

processes of the vertebrae, and the presence of ptosed

1910, p. 1033.

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SATURDAY, MARCH 4, 1916

NEW EVIDENCE AGAINST ALCOHOL

If it could be shown, we read in a recent careful review of the alcohol question, that small doses of alcohol produce no ascertainable ill effects on the human organism, the higher mortality among the moderate drinkers as compared to total abstainers might have to be explained as due to some as yet unrecognized cause or causes other than alcohol. But if laboratory and clinical evidence shows that alcohol in so-called moderate quantities (social moderation) produces definite ill effects, such as lowering the resistance to disease, increasing the liability to accident and interfering with the efficiency of mind and body and thus lessening the chances for success in life, to say nothing of any toxic degenerative effect on liver, kidneys, brain and other organs, the excess mortality that unquestionably obtains among moderate drinkers as compared to total abstainers must be ascribed chiefly to alcohol.[1]

The data already collected on the effects of alcohol are extremely voluminous. Some of the work may be said to be tinged with almost inevitable traces of personal bias, for the subject is one on which many persons have firm convictions, often based on ethical, social or economic grounds rather than on physiologic evidence. Nothing is more convincing in this field, however, than clear-cut indications furnished by strictly objective scientific investigation of the possible effects of alcohol in moderate doses — for these alone are worthy of debate — on the functions of the human organism. Duplication of results and frequent repetition of the experiments by independent investigators in a matter of such fundamental importance will call forth no criticism of wasted scientific energy. Accordingly the Nutrition Laboratory of the Carnegie Institution of Washington, ideally equipped for a reinvestigation of the alcohol question under the best auspices, has taken up the subject anew with a thoroughness and on a scale which it is expected will satisfy the majority of scientists as to the dependability of the results. The program for this exhaustive experimental study of the physiologic consequences of the ingestion of small doses of ethyl alcohol in man has begun with the psychologic aspects of the subject. This feature, studied by Dodge and Benedict,[2] included the effects of alcohol on a selected group of interrelated processes covering the fundamental neural activities at various levels of the cerebrospinal system, from the simplest reflexes of the lumbar cord to the most complex cortical arcs that could be measured accurately by available laboratory technic.

Of the simple reflex arcs which are available for experimentation, the patellar reflex and the protective lid-reflex were chosen, chiefly because of their similar latency and the accuracy of their modern technics. As types of more complex cortical arcs, certain eye reactions to peripheral stimuli, speech reactions to visual word stimuli, and free associations were selected. Dodge and Benedict regard the last two mentioned as characteristic phases of the individual's adjustment to his social environment. The fundamental perseveration tendency was measured by the partial memorization of series of words. Sensory changes were ascertained by faradic threshold measurements. Motor coordination and the reciprocal innervation of muscles are further details that were studied.

The subjects were either college graduates who were very moderate users of alcohol or patients who had been under treatment for alcoholism. Two alcohol doses were used, one containing approximately 30 c.c. and the other 45 c.c. of absolute alcohol.

The greatest effect was found in the reflexes. In the patellar reflex, alcohol increased the latent time 10 per cent., while it decreased the amount of quadriceps thickening 46 per cent. In the protective lid-reflex it increased the latent time 7 per cent., while it decreased the extent of lid movement 19 per cent. It increased the latent time of the eye reactions 5 per cent., and that of the speech reactions 3 per cent. Memory and the free associations were only slightly affected. Sensitivity to faradic stimulation decreased 14 per cent. after alcohol. The number of finger movements decreased 9 per cent., and the velocity of the eye movements decreased 11 per cent. as a consequence of the ingestion of alcohol.

These observations bring further evidence of the general depression of the neuromuscular processes at all levels of the cerebrospinal system. There is depression of even the simplest forms of motor processes, such as are found in eye and finger movements. Certainly nothing in all of this suggests any true stimulation — any increase in psychologic or physiologic efficiency. Impairment seems to be the keynote expressed by the depression. Here is the statement of the Nutrition Laboratory investigators: "In conjunction with the pulse acceleration, the general neuromuscular depression may be regarded as presumptive

1. Fisher, Irving, and Fisk, E. L.: How to Live, New York, 1915, p. 236.

2. Dodge, R., and Benedict, F. G.: Neuromuscular Effects of Moderate Doses of Alcohol, Proc. Nat. Acad. Sc., 1915, i, 605.

evidence of the effect of alcohol on organic efficiency. In none of our data is there any indication of a pure facilitation effect of alcohol." These scientific findings leave the conclusion of Quensel[3] unimpeached. "Work and alcohol," he said, "do not belong together, especially when work demands wideawakedness, attention, exactness and endurance."

INSTRUMENTS OF PRECISION, AND PROGRESS IN SCIENCE

Professor Zeleny,[4] of the University of Minnesota, called attention recently to the indispensable service rendered to the progress of science by the development of instruments of precision. "Long experience," he said, "has taught that however much we may owe to the great minds that evolve basic generalizations and hypotheses, real progress in science ultimately rests on the establishment of facts. Our reasoning faculties by themselves are unable to cope with the complexity in the physical world, and are sure to stray from reality unless they are continually guided by observation and experiment." This is true not only for the physical sciences but also for the biologic sciences. As Professor Cope, one of the greatest of American zoologists, used to say, "Nature always proves to be less complex and ever so much more simple in her operations than would seem to be true to the theoretic considerations of the closet philosopher." Facts always prove simpler than theories, and observations than hypotheses, and both owe their accuracy to instrumental precision more than anything else.

What is true of science in general is particularly true of medicine. Instruments enable us not only to observe more accurately and more systematically all that our senses ordinarily perceive, but through them we actually become endowed with new senses that open up fields of knowledge of which otherwise we might not have dreamed. When Galileo devised the thermometer, he gave mankind a new and marvelous power of using the senses. This discovery made the sense of sight accurately serve the function of the heat sense. Nearly two centuries elapsed, after his discovery, before the thermometer came to be used in medicine. When the older medical practitioners saw thermometers used they asked rather superciliously whether physicians were expected to carry around such a toy to occupy the patient's attention and divert his mind. That has been the story of other instruments; the stethoscope, the blood counting apparatus and other diagnostic mechanical aids were each in turn considered with contempt. Galvani, revealing biologic electricity, was called "a dancing master for frogs." Even in our own time the blood pressure apparatus is going through something of the same experience, so far as the general practitioner is concerned.

Steps of real progress in medicine can be measured definitely by tracing the introduction of instruments particularly for diagnosis. Further, the progress of medical practice as an art depends largely on the generalization of the use of instruments of precision for diagnostic purposes. There is nearly always a distinct feeling of opposition to the introduction of new devices because of the inconvenience involved in having them at hand and the habits of accuracy demanded for their proper use. Once they are introduced we wonder how we ever managed to do without them, and realize how handicapped preceding generations of physicians were who knew nothing of them. While steps in the supposed progress that comes from hypothesis and theory often have to be retraced, with serious loss of time to the generation as well as disadvantage to the patient and discouragement for the physician, the advances which are registered with the use of instruments of precision remain with us as definite achievements for both the science and the art of medicine.

CEREBRAL PSEUDOTUMOR AND TORULA INFECTION

Occasionally cases occur with symptoms and signs that appear to warrant the diagnosis of brain tumor, but in which after a time recovery takes place or no tumor is found at operation or after death. Such cases are referred to as pseudotumor cerebri. Cases with recovery have seemed quite mysterious; only the complete study of similar cases under favorable conditions will help to clear up the dark points.

Recently Stoddard and Cutler[1] have published some observations on two cases that are of much interest not only from the bearing the results have on cerebral pseudotumor but also because they serve to enlarge and clarify our understanding of human infections with yeastlike organisms. The first case occurred in a woman, aged 42, who died some days after a right subtemporal decompression on account of symptoms of brain tumor, extending over a period of three months or more, and definite signs of increased pressure. Chronic inflammatory lesions, found in various places, explained the more localizing symptoms; there was internal hydrocephalus from stoppage by inflammatory tissue of the aqueduct of Sylvius, and also chronic meningitis. The second case was in a man, aged 39, who died after an illness of several months; the tentative diagnosis considered unilateral hydrocephalus, rapidly growing glioma and abscess in the temporal lobe; the postmortem examination showed an internal hydrocephalus, due to blockage of the foramen of Magendie by inflammatory tissue, chronic meningitis, peculiar lesions of necrotic and inflamma-

3. Quensel, U.: The Alcohol Question from a Medical Viewpoint—Studies in the Pathology of Alcoholism, Year Book, United States Brewers' Association, 1914, p. 168.
4. Zeleny: Science, Feb. 11, 1916.

1. Stoddard and Cutler: Torula Infection in Man, Monographs of the Rockefeller Institute for Medical Research, No. 6, 1916.

tory nature in the internal capsule and other parts of the brain, and fibrous processes in the lungs, bronchial lymph nodes, liver and spleen. In neither case were there any lesions of the surface of the body.

As to the nature of the lesions, it appears that in both cases there were present in the intracranial lesions in enormous numbers yeastlike organisms which the authors believe belong to the torula group. Unfortunately they could not make extensive cultural studies in their cases; the organisms were present in the cerebrospinal fluid in the second case — herein lies a hint of the possible value of cultural and microscopic study of the fluid for diagnostic purposes in similar cases — and injected in mice they produced quite typical lesions in the brain and meninges. Stoddard and Cutler also found that cultures of a torula, isolated from a pulmonary lesion in a horse (Frothingham), in mice and rats produced changes very much like those seen in their two human cases as well as in four more of like nature previously described by others, but regarded as cases of oidiomycosis or blastomycosis. The changes are of a chronic inflammatory nature, associated with more or less necrosis; the organism usually occurs within mononuclear and giant cells which suffer lysis and disintegration as it multiplies by budding. In the brain substance the lesions are peculiar in that the proliferative reaction is slight while the brain tissues melt away and a gelatinous material forms about the organisms. In other tissues the lesions resemble those of tuberculosis, and as healing takes place, fibrous masses may form. It is possible that intracranial lesions also may heal and hence that cases of pseudotumor cerebri with recovery may have been instances of this sort of infection.

As seen in the lesions, the organisms appear like nongranular, often hyaline, round masses with an easily stained wall, varying in size from 1 to 13 microns, often producing resting cells of larger size. It multiplies only by budding, does not produce mycelium, does not ferment sugars in the same way that yeasts do, and hence belongs in the torula group. It differs from typical yeasts, which, besides multiplying by budding, also form endospores and ferment sugars; from the organism of coccidioidal granuloma, which does not bud but sporulates and forms hyphae, and from the typical organisms of blastomycosis (preferably oidiomycosis), which bud, do not form spores, but produce mycelium. So far as observations now go, the morbid processes in the cases of torula infection in man differ in important characteristics from those of saccharomycosis, of which we as yet have only two instances (Busse, Buschke), of coccidioidal granuloma, and of systemic oidiomycosis, in none of which, to mention only one point, occur the solution of cells and tissues and the formation of gelatinous material described by Stoddard and Cutler in torula infection. On account of this histolytic action, which is especially striking in the early lesions, they propose that the organism be called *Torula histolytica*. They also recommend that the term "blastomycosis" be dropped, because of its indefinite biologic significance, and that the term "oidiomycosis" be applied to the diseases, caused by organisms that bud in the tissues and form mycelium in cultures, which appear to occur more frequently about Chicago than elsewhere. Much is yet to be learned about torula infection and the other diseases here discussed. The mode of infection is as yet obscure, and little or no help in diagnosis is available from immunologic methods. Almost every new case that is studied thoroughly adds something to our knowledge. Cases like those observed by Stoddard and Cutler, and others of related nature, probably occur more frequently than apparent. Progress depends on wider appreciation of this fact and of the need for special care that they do not escape recognition and study.

RESPIRATORY FEATURES OF CARDIAC AND CARDIORENAL DISEASE

The respiratory mechanism is singularly responsive to changes in the reaction of the blood. A very slight alteration in the direction of increased acidity, that is, hydrogen ion concentration, leads to a prompt stimulation of the respiratory center and corresponding effects on the respiratory movements. Ordinarily the reaction of the blood is regulated through the agencies of the kidneys, which excrete nonvolatile acids, and the lungs, which eliminate the volatile acid products of metabolism, notably carbon dioxid. Whenever the acid reaction of the blood increases, pulmonary ventilation is increased as a result, and an augmented output of carbon dioxid through the lungs follows. By reduction of the tension of the gas in the blood in this way the normal reaction of the circulating fluid usually is restored, and respiration resumes its usual pace. It has sometimes been believed that the carbon dioxid tension of the blood is the stimulatory factor in the chain of events just described; at present, however, it is agreed that carbon dioxid does not act specifically in this sense, but only so far as it exerts acid properties.[1] It is also the acid factor most readily eliminated.

Carbon dioxid introduced into the inspired air and thus returned to the blood readily leads to dyspnea. It acts to increase the stimulus to the respiratory center, and can be applied in a functional test of the respiration. Exercise, of course, acts in a comparable way. It increases the acid products in the blood, and promptly provokes increased pulmonary ventilation. Exercise cannot be measured easily, and it involves a variety of added factors, such as the heart and skeletal muscles, which cannot be kept constant or strictly comparable where comparisons are to be instituted. For this reason Peabody of the Peter Bent Brigham Hos-

1. Winterstein, H.: Neue Untersuchungen über die physikalisch-chemische Regulierung der Atmung, Biochem. Ztschr., 1915, lxx, 45.

pital, in his functional tests, has studied the effects of breathing increasing quantities of carbon dioxid in normal subjects and patients at rest.[2] It was found that normal individuals exhibit a fairly uniform and constant increase in ventilation to a given rise in carbon dioxid in the air breathed. Their total ventilation is doubled when the carbon dioxid is between 4.2 and 5.4 per cent. The experiments revealed no differences in response which bore any relation to age, size or weight. Cardiac and cardiorenal patients whose circulation is compensated, and who have no evidence of acidosis as shown by the carbon dioxid tension of the alveolar air, behave in an exactly similar manner. Patients, however, with decompensation and with a grade of acidosis sufficient to lower the alveolar carbon dioxid, may double their ventilation when the carbon dioxid is only 2 to 3 per cent. of the inspired air.

Dyspnea, therefore, is produced much more easily in the patients with acidosis than in those without this symptom. A smaller increment of acid is required in the system to raise the hydrogen ion concentration of the blood to the point of greater stimulation effect. The explanation of this is probably quite simple. The range of the resistance of normal blood to any influence that tends to make it acid is greater than that of blood in the condition of acidosis. As the limit of this resistance is approached in acidosis, the addition of acids to the blood results in a larger and larger increment in the number of free hydrogen ions. The presence of an acidosis in cardiac cases thus renders the organism more sensitive to carbon dioxid or other acids formed in muscular work; and the muscular work sufficient to cause dyspnea is less than under normal conditions. In the pure cardiac cases, the dyspnea seems to depend on a slow or insufficient circulation, which results in a poor oxygenation in the tissues, and may even cause a transient acidosis, owing to the incomplete combustion of metabolic products. In the cardiorenal cases this may be complicated by the presence of a considerable permanent acidosis resulting from imperfect renal excretion of nonvolatile acid products. The acidosis of chronic nephritis is due to a retention resulting from inefficient renal excretion.[3] When acidosis is associated with cardiac weakness, the question of acidosis becomes much more involved, as a new element is added. There is not only the acidosis of nephritis, due to the imperfect renal function, but there may also be an accumulation of acid products of metabolism which are the results of an inadequacy of the supply of oxygen reaching the tissues. Peabody concludes that while acidosis is probably not the sole factor causing the dyspnea in cardiac and cardiorenal disease, it may be an element of considerable importance in producing the clinical picture.

2. Peabody, F. W.: Clinical Studies on the Respiration, No. 1, The Effect of Carbon Dioxid in the Inspired Air on Patients with Cardiac Disease, Arch. Int. Med., November, 1915, p. 846.

3. Peabody, F. W.: Clinical Studies on the Respiration, II, The Acidosis of Chronic Nephritis, Arch. Int. Med., December, 1915, p. 955.

THE NATIONAL BOARD OF MEDICAL EXAMINERS

Until about forty-five years ago, only one or two states had any laws regulating the practice of medicine, and until 1882, no state required an examination. At that time in the majority of states a diploma from a medical college was all that was necessary to obtain for its holder the right to practice. The physician who desired to move to another state was put to no particular hardship, since all he had to do was to present his diploma. By 1902, however, the number of states in which the examination of all applicants was required had been increased to thirty-eight. The diploma then became a mere "scrap of paper" without value except to the extent of admitting its holder to the licensing examination — an ordeal which few men who had been in practice for several years could pass, at least without the sacrifice of much time and labor for a review of the fundamentals of medicine. Important as was such an examination for the recent graduate in order to prove his training in those fundamentals, it consisted largely of nonessentials for those who had long been in active practice.

In order to correct this apparent injustice to practitioners of medicine, a system of reciprocity was devised: the state board waived its right to test the qualifications of the applicant, and accepted the certificate of another board in lieu of its own examination. Even at present the provision made for reciprocity provides for only a small proportion of the instances in which physicians, for good reasons, desire to move from one state to another.

Fourteen years ago THE JOURNAL[1] called attention to these conditions, pointed out that only nine states remained in which a physician's diploma would entitle him to secure a license without an examination, and recommended a voluntary national board of medical examiners as the most practical solution of the problem. At that time the three government services in Washington were suggested as the basis for the creation of this national board. It was also shown that the educational standards should be sufficiently high and the character of the examination so practical and thorough that the qualification thus secured could be recognized by the licensing boards of the various states. As announced about three months ago,[2] a definite movement was under way, and, as shown on page 762 this week, the creation of such a board is now an accomplished fact.

No scheme could be adopted which would not be subject to criticism for some reason or other, but the plan on which this board is created appears to leave little ground for criticism. Since it is a voluntary board, its certificate need not be accepted by any state licensing board unless it sees fit to do so. On the

1. National Board of Medical Examiners, editorial, THE JOURNAL A. M. A., Jan. 11, 1902, p. 108.

2. A National Board of Medical Examiners, editorial, THE JOURNAL A. M. A., Dec. 11, 1915, p. 2091.

other hand, this board will be in position to conduct an examination more thorough and more practical than is possible by individual licensing boards. The recognition of this board's certificate, after its value has once been established, will be under the exercise of the same discretionary powers of the state board as is employed at the present time in the recognition of the certificate of another licensing board. In both instances the licensing board accepts a recognized certificate of qualification in lieu of its own examination.

Heretofore the great obstacle to the establishment of a national board has been the lack of sufficient money to meet expenses until the board could be placed on a self-supporting basis. This need has been met by the Carnegie Foundation for the Advancement of Teaching, which is providing the necessary funds.

The first examinations are to be held in the city of Washington, where adequate laboratories, equipment and clinical material have been placed at the disposal of the board. The ultimate success of this board, however, requires that the examinations be held in different sections of the country, since few medical graduates will go to the expense of a trip across the continent to take such examinations. Any high grade university medical school will doubtless be glad to place its laboratories and ample laboratory apparatus at the service of this board, and also to guarantee an adequate amount and variety of clinical cases to meet the needs of the examination.

There are other important problems to solve, and the possibilities for good that rest in this board, both as regards the public and the medical profession, are so great that careful deliberation should precede every step taken toward the solution of these problems. One mistake may put back for a decade this movement, which is now so promisingly started. By the success of this undertaking, not only will the standard of the medical profession be improved, but the public also will in large measure be benefited.

Current Comment

A NATIONAL LEPROSARIUM

A bill is at present pending before Congress providing for an appropriation of $250,000 for the erection of buildings, maintenance and salaries of a national leprosarium, and for the study of leprosy and its prevention. It has passed the lower house and is now before the Senate Committee on Public Health and National Quarantine. Physicians, sanitarians and public health workers especially interested in this subject have appeared before this committee and recommended the passage of the bill. The leper has always been a source of distress to his fellow man, and his care a vexatious problem. In the United States the question has been especially difficult, owing to the fact that only three states possess permanent leprosariums. In practically all new cases that have appeared in this country during the past few years, the patients contracted the disease outside of the United States. Although the manner of propagation of the disease is not fully understood, it is known to be contagious, and the prevention must be realized chiefly through isolation. While our laxness in regard to vital and morbidity statistics makes it impossible to say definitely how many cases there are, it has been estimated that there are between 800 and 1,000 cases at present in the United States, and that the number is increasing. When patients suffering from leprosy are discovered they are sensationally discussed by the newspapers, and treated rather as criminals than as unoffending unfortunates whose existence is thenceforth to be marked by hysterical fear on the part of the populace and an almost inhuman persecution by unsympathetic and uninformed public officials. The leper chooses rather to spend his time in continual flight than to remain long in any one place where he will be subject to unremitting indignities.

FACTS ABOUT THE BEHAVIOR OF THYMOL IN THE BODY

In connection with the treatment of hookworm disease and comparable forms of intestinal infection with parasitic invaders, considerable prominence has been given to the use of thymol (methylisopropylphenol), a phenol derivative obtained commercially from oil of ajowan and occurring in oil of horsemint, oil of thyme and some other volatile oils. Thymol is an antiseptic comparable in many ways to phenol and the cresols, but it is less soluble in water, and for this reason has been supposed to be absorbed with greater difficulty from the alimentary tract. The latter assumption has made it seem more valuable as an antiseptic for use in the gastro-intestinal tube because of the protection from direct intoxication by the drug thereby afforded to the organism as a whole while the parasite is being destroyed. Owing to the solubility of thymol in oils, it has repeatedly been urged that, when the drug is used, fatty substances should be avoided in the diet in order to avert undue absorption of the large doses required for anthelmintic effects. One might expect that a compound with these properties would reappear in considerable quantities in the feces after its administration by oral paths. Investigations in the Hygienic Laboratory of the U. S. Public Health Service have shown, however, that only insignificant amounts of ingested thymol are excreted in this way.[1] This would indicate that thymol is almost completely absorbed from the alimentary tract and must therefore be oxidized in the body or excreted in the urine. Seidell[2] has therefore directed attention to the behavior of the compound after absorption. It has long been known that absorbed thymol may reappear in the urine as a glycuronate, just as other alcoholic derivatives conjugate with glycuronic acid in the metabolism. A careful study of the fate of thymol gave promise of disclosing

1. Schultz, W. H., and Seidell, A.: Orig. Com. VIII Internat. Cong. Applied Chem., 1912, xix, 281.
2. Seidell, A.: The Excretion of Thymol in the Urine, Bull. 101, Hyg. Lab., U. S. P. H. S., 1915, p. 43.

the mechanism of its action on hookworms, and consequently of indicating the path to be followed in developing drugs of greater potency and safety than thymol. Even now it is being urged that the oil of chenopodium or oil of American wormseed be thus employed. The supply of thymol is said to be extremely limited at present, and the oil of chenopodium is regarded as generally safer.[3] Seidell has found that less than 50 per cent. of the thymol administered either to experimental animals or to human patients who received the thymol treatment for hookworms reappears in the urine. This result, in connection with the previously mentioned experiments on the determination of thymol in the feces, shows that of the thymol administered, from one half to two thirds is apparently destroyed or fixed in the body. A similar fate is suggested for compounds of related type, such as the simpler phenols. No satisfactory explanation has as yet been found for this apparent disappearance of administered phenols. With respect to the fraction that is not reexcreted as glycuronate, it has been surmised that it may be temporarily fixed by the tissues or eliminated by volatilization with the expired air. This is mere conjecture without any supporting evidence. From a practical standpoint there is significance in Seidell's finding that the simultaneous administration of olive oil with thymol apparently caused very slight if any effect on the percentage of excreted drug. In his opinion it is a question, therefore, whether oils really increase the amount of absorption or only the rate.

THE INTERRELATION BETWEEN SALIVARY AND GASTRIC DIGESTION

Physiologists have long known that the starch-digesting enzyme present in the saliva of man is destroyed as soon as it is exposed to even small concentrations of "free" hydrochloric acid, or, in terms of modern chemical interpretation, hydrogen ions present in the stomach. From the standpoint of a useful performance on the part of the starch-digesting saliva, the ready inhibition of its effectiveness as a digestive agent was somewhat mystifying when it was first discovered; for the duration of amylolytic activity appeared to be restricted essentially to the very brief period during which the foods are retained in the mouth, masticated and swallowed. Subsequently it was ascertained that the actual sequence of events within the stomach does not compel an immediate mixing of the entering contents with the gastric juice which is being secreted. The mass that is swallowed in successive portions accumulates at first in the fundus of the stomach; and since in the absence of vigorous muscular movements in that region the contents are penetrated with great difficulty by the gastric secretion which is continually being poured out by the walls of the stomach, salivary digestion can actually proceed for a considerable time without serious interruption. In view of the rapidity with which the salivary enzyme can convert starch into soluble sugar, the preliminary digestion of carbohydrates can therefore usually be completed before destruction of the effective agent in the saliva takes place. Dr. Maxwell,[1] of the physiologic laboratory at the University of Melbourne, has suggested a further function of the salivary enzyme which he believes to be of importance for the later digestive processes. It has long been known that many substances in suspension or in colloidal solution have the power of adsorbing enzymes, thereby inhibiting their activity. Maxwell has found experimentally that although unboiled starch administered in the form of intact grains does not hinder the action of pepsin, peptic digestion may be delayed in the presence of colloidal starch solutions through adsorption of the proteolytic enzyme. The time interval for the peptic digestion may, for example, be increased fourfold in the presence of a 2 per cent. starch solution. There is a stage in the progressive digestive disruption of the starch molecule at which the capacity of adsorption of pepsin is lost. This is coincident with the appearance of dextrins, even before sugars are formed. In accord with the foregoing it is actually found that cooked farinaceous foods — rice, potato, bread, porridge, etc. — all hinder peptic digestion if they are not first subjected to the salivary digestion. The inhibition of peptic activity by carbohydrates like gum acacia is not prevented by a previous contact with saliva for the reason that they are not digested by it. The positive feature to which Maxwell has drawn attention has been summarized by the statement that the saliva of man, by virtue of its enzyme ptyalin or amylase, plays a considerable part in aiding gastric digestion by hydrolyzing colloidal starch which would otherwise adsorb pepsin.

3. Hatcher, R. A., and Wilbert, M. I.: Pharmacology of Useful Drugs, Chicago, American Medical Association, 1915, p. 442.

1. Maxwell, L. A. I.: The Relation of Salivary to Gastric Secretion, Biochem. Jour., 1915, ix, 323.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

Protest Against the Wrapping of Bread.—Washington bakers have appeared before a committee of the United States Senate to protest against the enactment of a pending bill to make the wrapping of bread by bakers compulsory in the District of Columbia. Its enactment has been recommended by the Commissioners of the District.

A New Refuse Disposal Project.—The Commissioners of the District have recommended to Congress that garbage, ashes, miscellaneous refuse and dead animals be collected by the District government directly, and not through the agency of contractors as at present. Garbage and dead animals are to be converted into grease and fertilizer in reduction works. Ashes are to be used for filling low land. Rubbish is to be sorted for the recovery of salable materials and the residue burned in an incinerator. The collection of night soil will be continued by contract, as is now done, but the contractor will be required to treat it so as to destroy bacteria before applying it to the soil. The total estimated capital cost of the undertaking is $885,900. Two years will be required for the construction of the proposed disposal plants.

Lengthening the Working Day for Government Employees.—An increase from seven hours to eight hours in the working

day of government clerks and other employees in the executive departments in Washington is proposed in an amendment or "rider" to the legislative, executive and judicial appropriation bill offered by Representative Borland of Missouri. As the population of Washington and its suburbs is made up largely of government employees, official, commercial and social life have long been adjusted to the seven hour day. There is a general protest against the change on this account as well as because of the failure of the Borland amendment to provide additional compensation for the additional time demanded and because of the likelihood that increased hours will mean decreased efficiency. Although the clerks and other employees affected by the proposed change are not identified with the American Federation of Labor, the Federation, after action by its executive council, has filed a strong protest.

ILLINOIS

Personal.—Dr. Percy J. Carroll has resigned as surgeon of the Macon County Hospital, Decatur, and will practice in East St. Louis.——Dr. Edmond H. Ames, Antioch, a veteran physician of Lake County, has become totally blind.

Physicians Endorse Water Works Plan.—The Kewanee Physicians' Club, at a recent meeting, endorsed heartily the proposed issue of bonds to finance the new water works. The members pledged themselves to support the plan of the mayor and city commissioner in any other reasonable plan to safeguard the water supply of the city.

Chicago

Internists Meet.—The ninth regular meeting of the Chicago Society of Internal Medicine was held February 28. Dr. Charles Spencer Williamson reported "A Case of Generalized Tuberculous Adenitis Resembling Hodgkin's Disease, with Recovery," and Dr. Arthur R. Elliott spoke on "Syphilitic Aortitis—Clinical and Roentgen Considerations," and Drs. Robert L. I. Smith, Martin R. Chase and James F. Churchill detailed the results of "Studies of Blood Urea in Various Types of Nephritis."

Personal.—Dr. Raymond W. McNealy has been appointed a member of the surgical staff of Cook County Hospital to fill the vacancy resulting from the departure of Dr. Harry M. Richter for service with the German Hospital unit.——Dr. John A. McGill, for three years president of the Illinois St. Andrews Society, was tendered a complimentary dinner by the organization at the Hotel La Salle, March 1.——Dr. Franklin H. Martin has been visiting in Pensacola, Fla.——Dr. and Mrs. James Stuart Pritchard started for California, February 20.

Eulogize Dr. Favill.—At the memorial meeting for Dr. Henry Baird Favill held at the City Club, February 26, Mr. Allen B. Pond, president of the club, eulogized Dr. Favill as follows: "Henry Favill: erect, lithe, the head thrown back, the elastic tread, the swinging stride, joyous vigor incarnate! It seemed that he, of all men, should for years to come resist the attacks of disease, the ravages of time, and yet—last Sunday in the faint gray of the early dawn that splendid spirit slipped away into eternal silence." Drs. Frank Billings, Graham Taylor, Sherman C. Kingsley and Frank H. Scott also paid eloquent tribute to the memory of Dr. Favill.

Sanitary District Blamed for Typhoid.—In February, seventy-one cases of typhoid fever were reported to the department of health from the district receiving its water supply from the Sixty-Eighth Street pumping station while only eighteen cases were reported from all the rest of the city. The health commissioner considers that the sanitary district of Chicago is responsible for this condition, which he considers due to the improper use of the drainage canal whereby "engines which were installed to pump sewage are employed to make more electricity for sale." A warning was issued by the commissioner to the people living in the territory bounded by Forty-Fifth Street on the north, Eighty-Ninth Street on the south and from the lake to the city limits, to take preventive inoculation against typhoid fever.

IOWA

Still Quarantine Against Illinois.—The Iowa Animal Health Commission, at a session, February 8, refused to withdraw the order prohibiting the shipment of stock from Illinois to Iowa owing to the presence of foot and mouth disease in that state.

Larger Hospital Needed.—The Evangelical Deaconess Hospital, Marshalltown, has issued an appeal to business men to raise $120,000 to complete the buildings required for the institution. Of this amount, $30,000 is asked from Marshalltown and Marshall County.

Personal.—Dr. Henry Matthey, Davenport, surgeon in chief of the Military Hospital at Braunsberg, East Prussia, on account of efficient service has been decorated by the German Emperor.——Dr. Will D. Runyon, assistant superintendent of the Iowa Sanatorium, Oakdale, has resigned to become surgeon and superintendent of the sanatorium of the Union Pacific System at Colorado Springs.——Dr. John W. Cogswell, health officer of Iowa City, ruptured an ear drum while diving in the swmming pool of the university gymnasium, February 9.

Child Welfare Research Station.—Although a bill for the establishment of a child welfare research station in the University of Iowa failed in the last legisiature, it is expected that such a measure will be adopted in the coming session. As a means of acquainting the people of the state with the objects and the great value and importance of such a research station, in *University Bulletin*, New Series 107, Carl E. Seashore, professor of psychology, has prepared a statement of the plans and possibilities of such a research station for the conservation and development of the normal child. The subject is discussed under the heads of heredity and prenatal care, nutrition of the child, preventive medicine, social surveys and social policy, education and morals and applied psychology. These apply to the research features of such a child welfare station. The practical features are provided for in a proposed extension division which would include a reference bureau, an examination bureau, a correspondence division, a loan library, a central permanent exhibit, publicity bulletins, etc.

KENTUCKY

Warning.—Dr. A. L. Thompson, Madisonville, writes to THE JOURNAL, asking that a warning be published against L. A. McCoy, who claims to represent the Ohio Service Company of Cincinnati, and who is selling automobile supply service at $10. He states that an investigation made in Cincinnati reveals the fact that there is no such concern as the Ohio Service Company known there.

MARYLAND

College Reopened.—St. John's College, Annapolis, which has been under quarantine restrictions for ten days because of the prevalence of scarlet fever, was given a clean bill of health by the health authorities, February 11, and the regular college work was resumed February 14.

Imported Typhoid.—The Danish steamer *Wladimer Savium*, which arrived at Baltimore, February 14, has seven cases of typhoid fever on board. The disease is believed to have been brought from Marseilles, France, and was at first thought to be typhus fever. The men are improving rapidly and will soon be able to return to duty.

Coroners for Baltimore City.—The following physicians were appointed during the past week by the governor as coroners to the various stations in the city: Drs. James K. Insley, F. Edward Smith, Otto M. Reinhardt, Walter L. Denny, William T. Riley, Albert D. Driscoll, James G. Wiltshire, John J. Morrissey, Jr., and Henry L. Sinskey.

New Home for Skin and Cancer Hospital.—The Skin and Cancer Hospital has recently moved into its new home on Greenmount Avenue, Baltimore. The buildings are large and the grounds ample for the accommodation of the patients. The work of the hospital is almost exclusively charitable, and a class of patients not usually received in other hospitals are treated. It is proposed at an early date to establish a free dispensary in connection with the hospital.

Personal.—Dr. Walter E. Dandy, for several years one of the assistant surgeons at Johns Hopkins Hospital, has been appointed resident surgeon of the hospital, to succeed Dr. Roy D. McClure, who recently became surgeon-in-chief at the new Henry Ford Hospital in Detroit. Dr. Dandy for nearly six years had made a special study of surgery at the Hopkins Hospital and has had considerable experience in research work.——Dr. Harry J. Moss, New York, who was recently appointed superintendent of the Hebrew Hospital, Baltimore, to succeed Dr. Mason R. Pratt, has taken up his new duties. Dr. Moss has been assistant superintendent of the Mount Sinai Hospital in New York.——Dr. Harry F.

Shipley, Granite, is under treatment for kidney trouble at the Mercy Hospital, Baltimore, and is said to be improving.

MICHIGAN

Communicable Diseases.—Dr. Allison H. Edwards has been elected city physician of Grand Rapids, to succeed Dr. Ralph C. Apted, deceased. His first duty is to investigate the reported cases of erysipelas in Butterworth Hospital.——Dr. Arthur B. Egan, city physician of Muskegon, has appointed a corps of inspectors whose duty it will be to visit the homes in Muskegon quarantined on account of scarlet fever, at least once in twenty-four hours.

Vital Statistics.—The Forty-Seventh Annual Registration Report of Michigan, covering the year 1913, has been printed and is ready for distribution. This is the sixteenth report of the new series containing accurate statistics of deaths as collected under the law of 1897, and accurate statistics of births as collected under the law of 1905. The report shows the following: total births in 1913, 73,058; births per 1,000 estimated population, 24.8; total deaths, 40,827; deaths per 1,000 estimated population, 13.8; total marriages, 33,529; persons married per 1,000 estimated population, 22.7; total number of divorces, 3,978; persons divorced per 1,000 estimated population, 2.7. The month of March shows the greatest number of births, November the least; March also shows the greatest daily mortality, while October shows the least. The maximum number of marriages per day was in June and the least in February. The report contains detailed analyses in tabular form and in the descriptive matter of the figures relating to vital statistics, the section relating to the causes of death is particularly interesting.

MINNESOTA

New State Board Members.—Drs. Samuel H. Boyer, Duluth, and Theodore Bratrud, Warren, have been appointed members of the State Board of Medical Examiners to succeed Drs. Charles Bolsta, Ortonville, and Frank B. Hicks, Grand Marais, terms expired.——Dr. Carl J. Holman, Mankato, has been reappointed a member of the board.

Leprosy.—According to figures given out by Dr. Henry M. Bracken, secretary of the state board of health, there are eight lepers in the state of Minnesota, all of whom are isolated so that the danger of spreading the disease is minimal. Dr. Bracken says the danger of contagion in leprosy is about one-hundredth as great as in tuberculosis. Sixty-three cases of the disease have been reported since 1890, and there were seventeen deaths from it prior to that time.

Personal.—Dr. and Mrs. Archa E. Wilcox narrowly escaped death in a fire which damaged their home in Minneapolis to the extent of $10,000, February 14.——Dr. Alfred M. Wang, Minneapolis, was overcome by smoke in a fire in the Hulet Block, February 4, and was rescued by firemen.——Dr. Adrien J. Kirghis, St. Cloud, sailed from New York for France on the steamer *La Touraine*, February 12.——Dr. Jacob W. Magelssen, Rushford, celebrated the fiftieth anniversary of his graduation from Rush Medical College, January 24.

Dispensary Opened.—The Medical Dispensary of Duluth opened, February 14, and is to be open each day from 12 to 1:30 p. m., when members of the staff will be on duty. A trained nurse is in charge during the entire day. Dr. Asher C. Taylor is chief of the general medical staff; Dr. Arthur S. Collins, chief of the surgical staff; Dr. Albert G. Schulze, chief of the department of children's diseases; Dr. Archibald L. McDonald, chief of the department of gynecology and Dr. David L. Tilderquist, chief of the department of diseases of the eye, ear, nose and throat.

NEW JERSEY

Motor Club Organized.—Physicians of Camden have organized a motor club with an initial membership of eighty-one, and have elected the following officers: president, Dr. Ahab H. Lippincott; secretary, Dr. W. Kempton Browning, and treasurer, Dr. Thomas M. Kain.

Tuberculosis.—The board of health of Perth Amboy has started an agitation for an isolation hospital for Middlesex County for tuberculosis patients.——Two men of Passaic suffering from tuberculosis were charged with wilfully exposing their minor children to the disease. Both defendants had been inmates of the Isolation Hospital. Judge Costello at the hearing of the case, February 19, sentenced both men to a term of six months in the tuberculosis pavilion of the Isolation Hospital.

NEW YORK

Wife Also Dies.—Mrs. Pauline Rosenburg Elsner, widow of Dr. Henry Leopold Elsner, who died in Washington, February 17, died at her home in Syracuse, February 23, from grief and shock consequent to the death of Dr. Elsner.

To Do Honor to Elsner's Memory.—A joint meeting of the Syracuse Academy of Medicine and the Onondaga County Medical Society was held, February 18, to conduct memorial exercises in honor of the memory of Dr. Henry L. Elsner and to draft suitable resolutions and to contribute a floral offering. The committee selected to attend to these details consisted of Drs. I. Harris Levy, David M. Totman, Frank P. Knowlton, William A. Groat and Edwin H. Shepard.

Health Centers.—Buffalo has established three health centers, with regular hours for consultation and treatment of the residents of the territory adjacent to the center. The following supplies are distributed free from these centers to physicians and the public: diphtheria and tetanus antitoxins, vaccine virus, typhoid vaccine, meningitis serum, diphtheria culture tubes, Widal outfits, sputum cups, holders and fillers, pocket sputum cups, paper napkins and paraffined bags.

Endowment of Art and Science Department of University.—The University of Buffalo has received actual and provisional endowment for the new department of arts and sciences, amounting to $750,000. Of this amount, $100,000 has been given outright by Mrs. Seymour H. Knox, who with her children, expects eventually to increase this to a total of $500,000. Gen. Edmund Hayes has given $250,000 for the first building on the university site, providing $1,000,000 be raised for like purposes before June, 1919.

The Financial Budget and State Hospitals.—The first public discussion with reference to the budget for hospitals and charitable institutions of the state was held on February 23, at which time Dr. Charles G. Wagner, superintendent of the Binghamp. n State Hospital, said there were many reasons why the budget plan of appropriations could not work. He suggested that if the superintendents of state hospitals got together they could devise a plan by which many thousands of dollars could be saved to the state. As a result of this suggestion, a letter is being sent to each superintendent of a state hospital asking for his ideas on the preparation of a financial bill.

New York City

Personal.—Dr. and Mrs. Forbes Hawkes have sailed for Havana.——Dr. George O'Hanlon, general medical superintendent of the Bellevue Hospital, acted as city paymaster, February 16, and paid from his own pocket a payroll of $2,000, which he hopes to collect later from the city.

Instruction in Contagious Diseases.—In 1915, the health department conducted a series of lectures and a laboratory course in infectious diseases open free to the practicing physicians of the city. The course was so successful that the department, as announced in the *Weekly Bulletin*, will give another course this spring, the days, dates and hours to be announced.

Changes in Medical Faculty of Columbia University.—Prof. Raymond Dodge of Wesleyan University has been appointed nonresident lecturer in psychology for the academic year; Dr. Alexander T. Martin, lecturer in pharmacology; Dr. Archibald M. Strong, lecturer in clinical medicine, and Dr. Euen Van Kleeck, instructor in physiology. Dr. Gorham Bacon has tendered his resignation as professor of otology, to take effect at the close of the present academic year.

Leprosy.—A statement before the senate health committee, February 15, to the effect that there were 100 persons with leprosy at large in New York, has brought out the statement from the authorities that there are only twenty-four known lepers in the city. They are permitted to live in their homes and engage in their usual occupations, this arrangement being made during the administration of Dr. Sigismund S. Goldwater as health commissioner, after consultation with the leading dermatologists of the city.

New Medical Society Organized.—The first meeting of the Bay Ridge Medical Society was held on the evening of February 1. The district from which the membership is recruited embraces the territory from the Narrows to Thirty-Ninth Street and Gravesend Avenue. The following officers were elected: president, Dr. John P. McQuillin; vice president, Dr. Robert E. Coughlin; secretary, Dr. Frank E. A. Stoney; treasurer, Dr. Roderick Byington, all of Brooklyn. The society has forty-two charter members.

state.

the Mount Sinai Hospital in New York.——Dr. Harry F.

Memorial to Blackwell Sisters.—Friends and classmates of the late Drs. Emily and Elizabeth Blackwell, pioneers in medical education for women, gathered, February 18, at the New York Infirmary for Women and Children, which was founded by the Drs. Blackwell in 1853, formally to dedicate the Emily Blackwell ward and to present the Emily Blackwell tablet. Dr. Josephine Walter presented the tablet in behalf of the Emily Blackwell testimonial fund which was started by the alumnae association of the college in 1899, to raise $20,000 for a memorial ward and tablet.

To Promote Industrial Hygiene.—On February 18, a meeting was held in Cooper Union under the auspices of the People's Institute and the department of health to discuss the duties of the city government toward the working people of the community, with especial reference to improving the conditions under which they work. The speakers were Dr. Sigismund S. Goldwater, Hugh Frayne, Dr. Henry Moskowitz, Royal Meeker and Dr. Louis I. Harris. Letters and telegrams expressing sympathy with the purposes of the meeting were read from President Wilson, Governor Whitman, Congressman London and others.

Semicentennial of New York Health Department.—The New York City Department of Health is to celebrate its semicentennial by a banquet at the Hotel Plaza, March 9. It is said that as at present constituted, the department dates from 1866, when the jurisdiction covered not only New York City and Brooklyn, but the several surrounding counties, and the death rate was larger than that of any other large city in the world. In the last fifty years it has been reduced from 36 per thousand to less than 14. Among the speakers at the banquet will be Mayor Mitchell, Henry Bruers, Surgeon-General Gorgas, State Health Commissioner Briggs, Dr. William H. Welch, Dr. Peter Bryce, representing the Dominion of Canada, and Dr. Stephen Smith, the latter being a member of the original board of health.

OHIO

Hospital for Youngstown.—The chamber of commerce and board of health of Youngstown are working in conjunction for the establishment of an unpretentious but substantial isolation hospital, the cost not to exceed $25,000, to be erected on the site now owned by the city on Mahoning Avenue.

Personal.—Dr. Clyde E. Ford, Cleveland, has been appointed secretary of the state board of health, succeeding Dr. Eugene F. McCampbell, Columbus, resigned.——Dr. William H. White, Cleveland, has been elected chief medical examiner of the Workmen's Compensation Insurance Department of the State Industrial Commission.——Dr. Frank Warner, Columbus, read a paper before the B. Merrill Ricketts' Experimental Surgical Research Laboratory, Cincinnati, February 19, on "Endocarteritis and Connective Tissue Changes in Their Relation to Epithelial Malignancies, Based on the Study of Two Hundred and Six Cases," illustrated by lantern slides.

PENNSYLVANIA

Measles Close Schools.—On February 24, Dr. Samuel G. Dixon, State Health Commissioner, notified the Allentown health authorities that on account of the epidemic of measles they should at once close all schoolhouses, and forbid all children under 15 years of age to go to public places of amusement. There are at present 260 cases of measles under quarantine in Allentown, and thus far this month there have been 365 cases, with several deaths. Theaters and other places violating the regulations will be closed.

Industrial Plants Defy Law Compelling Medical Attendance.—It has been called to the attention of the Bureau of Medical Education and Licensure of the State of Pennsylvania that certain industrial and commercial plants have violated the Medical Practice Act of Jan. 1, 1912, by the employment of unlicensed persons to give medical and surgical attention to their injured employees, and to render services such as may be legally performed only by one licensed to practice medicine in this state. This bureau, therefore, desires to place emphasis on the following facts:

The head of the medical department of any industrial or commercial plant must be a licensed physician of this state.

It is not permissible for either an unlicensed assistant or a nurse to in any way alter the treatment until the order to do so has been given by the licensed head of the department.

It is legal in Pennsylvania for any one, licensed or unlicensed, to apply first aid to any injured person, but it follows as a prerequisite that the licensed head of the department must see this patient at his next visit and direct the future treatment.

It is not permissible for an unlicensed assistant or a nurse to perform any type of surgical operation.

"First aid" is to be construed as meaning the rendering of only such services as will contribute to the safety and comfort of the injured until he or she has the opportunity of consulting a licensed physician.

The attention of industrial and commercial plants is called to the fact that violation of this act is subject to severe penalties.

Philadelphia

New Head for Blockley.—William G. McAllister has been named superintendent of the Bureau of Charities, succeeding Danley W. Seltzer, resigned, and will have charge of the Philadelphia General Hospital, the Hospital for the Insane, and the Home for the Indigent at Byberry.

Feebleminded Exhibit.—Six states have contributed exhibits to the Feebleminded Exhibition, held in this city, February 23 to March 5, under the auspices of Public Charities Association of Pennsylvania with the cooperation of local organizations and a dozen state institutions. On February 24, an average of a thousand visitors an hour attended the exhibit. A new exhibit from the Seybert Institution arrived on that day, which explained by means of pictures and charts the unusually efficient methods taken to determine the mental state of a boy. Among the lecturers were Mrs. Martha P. Falconer, superintendent of Sleighton Farms, Dr. John K. Mitchell and Dr. Walter S. Cornell.

Personal.—Dr. Philip F. Williams has been elected a member of the obstetric staff of the Maternity Hospital, vice Dr. E. P. Bernard, resigned.——The staff of the proposed postgraduate tuberculosis school at Saranac, in the Adirondacks, will include Dr. Henry R. M. Landis, chief of the Henry Phipps Institute.——Dr. Charles F. Mitchell, former secretary of the Academy of Surgery, is now at Paris on duty with the American Ambulance.——Prof. Richard P. Strong of the Harvard Medical School will deliver the fourteenth Rush Society lecture of the College of Physicians, March 7. His subject will be "Investigation of Typhus Fever in Serbia."——Dr. A. C. Valentine has been named as physician at the Home for the Indigent by Dr. Wilmer Crusen, director of Public Health and Charities. The salary is $720 a year.

TEXAS

Revised Quarantine Code.—At a conference, February 9, between the United States customs collector at Galveston and Governor Ferguson, the controversy between the federal and state governments over the enforcement of quarantine regulations at the port of Galveston is stated to have been settled.

Personal.—Dr. Joseph S. Wooten has been elected chairman of the Red Cross chapter of Austin.——Drs. Beverly T. Young, San Antonio; William M. Brumby, Waco; Zachary T. Scott, Austin; and James M. Loving, Austin, were elected directors of the Texas Public Health Association at its meeting in Austin, January 26.

Health Survey.—A health survey is to be made of Paris County under the auspices of the Rockefeller International Health Commission. This survey will include inspection of homes and people and, in addition, a campaign of education. ——The health survey of Orange has been commenced under the charge of Assistant State Health Officer Addeson L. Lincecum, Austin.

Hospital Needed at Houston.—As the result of studies of sanitary conditions in Houston made by Miss Ella Phillips Crandall, the executive secretary of the National Organization of Public Health Nursing, New York, she considers a hospital for the care of communicable diseases and tuberculosis and the districting of the city for clinics and general nurse service the most imperative need of Houston at present.

Students Must be Vaccinated.—Under date of February 5, it was reported that the board of health had issued a mandate that students in all schools, public and private, in San Antonio, must be vaccinated in accordance with the state law. City Attorney Gillette had advised the board that it had full legal power to make the order and the mayor declared that the city would back the board to the full extent of its power. Teachers permitting students to attend school without having been vaccinated, it was said, would be arrested.

UTAH

New Officers.—At the annual meeting of the Utah County Medical Society, January 26, the following officers were

elected: president, Dr. Oscar E. Grua, Pleasant Grove; vice president, Dr. Asa L. Curtis, Payson, and secretary-treasurer, Dr. Walter T. Hasler, Provo (reelected).

Personal.—The president of the Salt Lake County Medical Society and eighty-two other practitioners of Salt Lake City have petitioned the city council asking that Dr. Samuel G. Paul be retained as city commissioner.——Dr. George E. Hyde, Salt Lake City, has been appointed assistant physician of the State Mental Hospital, Provo.

Advisory Medical Staff Planned.—The County Commissioners of Salt Lake City County suggest that an advisory staff of physicians and surgeons he selected to serve the County Hospital free of charge; that the county physician and his assistants devote their time to county health and sanitary affairs outside of the hospital, and that an intern be employed on a salary basis.

CANADA

Dissecting Laboratory for Sherbrooke, Quebec.—Drs. Joseph E. Noel, Jude O. Camirand, and Calixte Ethier, Sr., of Sherbrooke, Que., recently waited on Sir Lorimer Gouin, premier of Quebec, with the petition that the medical bureau in Sherbrooke be empowered to establish a dissecting laboratory. The matter will receive consideration at the hands of the Quebec government.

Manitoba Physicians Meet.—The annual meeting of the Manitoba Medical Association was held in Winnipeg, February 15, under the presidency of Dr. John S. Poole, Neepawa. It was decided that subject to war conditions, the next meeting should be held in the city of Brandon. A resolution was passed expressing the regret of the association on the death of Dr. James R. Jones. The following officers were elected: president, Dr. James McKenty, Winnipeg; vice presidents, Drs. Albert E. Walkey, Portage la Prairie, and Lewis J. Carter, Brandon; secretary, Dr. Alvin T. Mathers, Winnipeg, and treasurer, Dr. T. Glendenning Hamilton, Winnipeg.

Hospital News.—A base hospital is to be organized in Toronto for returned soldiers, and it is likely that the old Toronto General Hospital building will be utilized for the purpose.——The Medicine Hat, Sask., General Hospital treated 1,458 patients during the past hospital year.——The members of the Civil Service in Victoria, B. C., will furnish a ward in the Royal Jubilee Hospital of that city to be named after Sir Richard McBride, former premier, who has departed for England to represent the province abroad.——The Western Hospital, Montreal, treated 15,810 outpatients during 1915. The financial report shows a deficit for the year of over $8,000.

Personal.—Dr. Richard Howey, Owen Sount, Ont., has joined the Canadian Army Medical Corps, and has sailed for England.——Major Perry G. Goldsmith, Toronto, who has been in France with the first Canadian Overseas Force, is home in Toronto for a short furlough. He has recently been gazetted lieutenant colonel and on his return to England will take up his new duties in the Folkestone Eye and Ear Hospital.——Dr. Reginald W. Digby is to be placed in charge of the pathologic department of the Brantford, Ont., General Hospital.——Dr. Allan B. Rutherford has been appointed acting medical officer of health at Owen Sound, Ont., during the absence of Captain Herbert G. Murray on active service.——Major John L. Todd of McGill University, and who is now in France, has been elected a Fellow of the Royal Colonial Institute.——Dr. Henry R. T. Fort, Wallachin, B. C., has been appointed medical superintendent of the Mission Hospital at Lytton.——Dr. Jim B. Jupp, Woodstock, Ont., who went to England with Toronto batteries in January, is reported to be seriously ill with pneumonia in the hospital at Folkestone, England.——Major Ethelbert B. Hardy, a Toronto physician, has been promoted to the rank of lieutenant colonel, and is now in command of No. 2 Field Ambulance in France.——Lieut.-Col. Henry R. Casgrain, Windsor, Ont., who was returned sick to England from command of No. 3 Canadian Hospital at Lemnos, has been appointed in command of the King's Canadian Convalescent Hospital at Bushey Park, England.

GENERAL

New England Roentgenologists Meet.—A meeting of the Roentgen Society of New England was held in Boston, February 12, at which Dr. Willis F. Manges, Philadelphia, gave a talk with lantern slide demonstration on "Brain Tumors" and "Pyeloscopy."

Health Meet in Joplin.—About fifteen cities in Southwestern Missouri, Southeastern Kansas and Northeastern Oklahoma were represented at a meeting held in Joplin, February 17, at which the Interstate Health Officers' Association was organized. The officers elected were: president, Dr. Daniel R. Hill, Joplin, Mo.; vice presidents, Drs. Charles F. Montee, Pittsburg, Kan., and Charles S. Huffman, Columbus, Kan.; secretary, Dr. Guy P. McNaughton, Miami, Okla.

Hides Carry Anthrax.—C. T. G. Rogers of the New York State Labor Department has requested the Surgeon-General of the United States Public Health Service to issue an order for the redisinfection of all hides imported from anthrax-infected ports of China and South America.——Niles Reynolds of Gloversville, N. Y., is said to have died from anthrax, February 13, the disease having been contracted while working on sheep skins imported from South America.

Deficiencies of the Child Supply to be Investigated.—As a means of advancing the national defense, Senator Kenyon of Iowa has introduced a resolution providing for the creation of a committee to investigate the causes of child poverty and to propose remedies for it. The resolution is based on the frequency with which men presenting themselves for enlistment in the military services are rejected because of physical defects that have had their origin during childhood. The commission is to consist of seven members, of whom three are to be physicians.

Tri-State Physicians Meet.—The Tri-State Medical Society of the Carolinas and Virginia held its eighteenth annual meeting in Richmond, Va., February 16 and 17, under the presidency of Dr. James H. McIntosh, Columbia, S. C. Durham, N. C., was selected as the next place of meeting and the following officers were elected: president, Dr. J. Allison Hodges, Richmond; vice presidents, Drs. Charles O. Laughinghouse, Greenville, N. C.; Harvey E. McConnell, Chester, S. C., and William F. Drewry, Petersburg, Va.; secretary-treasurer, Dr. Rolfe E. Hughes, Laurens, S. C. (reelected). Drs. John N. Upshur, Richmond, Va.; J. Howell Way, Waynesville, N. C., and Julius H. Taylor, Columbus, S. C., were elected members of the executive committee and Dr. John R. Gildersleeve, Richmond, Va., was elected an honorary fellow of the society.

Bequests and Donations.—The following bequests and donations have recently been announced:

St. Vincent's Hospital, New York City, $5,000; St. Rose's Free Home for Cancer, New York, $2,500; by the will of Thomas H. O'Connor.

St. John's Guild, New York, $3,000, by the will of Miss Lillian M. Payne.

New York Postgraduate Hospital and Montreal General Hospital, each $50,000, by the will of John Torrence Vanneck.

Tuberculosis Preventorium for Children, Farmingdale, N. J., a donation of $1,000 toward the erection of a pavilion for infants under 1 year of age, from Mrs. Henry Phipps.

St. Vincent's Home and St. Vincent's Maternity Hospital, Philadelphia, each $2,000; St. Mary's, St. Joseph's and St. Agnes' Hospitals, each $5,000 for the founding of free beds by the will of Mary E. Flaherty.

New York Hospital, $5,000, and St. Mark's Hospital, New York, a contingent bequest of $10,000, by the will of Mrs. Adelena M. Cramer.

Stoney Wold Society for the benefit of the sanatorium at Lake Kushaqua, N. Y., $5,000, by the will of Anna P. Morrison.

FOREIGN

For New Hospitals.—Consul Frank W. Mahin at Amsterdam, Netherlands, reports that a commission appointed to investigate and prepare estimates for increasing the public hospital accommodations in Amsterdam has made two propositions: the building of a new hospital and the making of important additions to the Wilhelmina Hospital. The proposed new hospital would be used for higher instruction in medicine and surgery, would contain at first 950 beds, the number to be later increased to 1,200, and would cost over $3,000,000. The addition to Wilhelmina Hospital, as proposed, would give 500 additional beds, and would also provide for medical instruction. The cost would be about $2,000,000. The present hospital accommodation of Amsterdam is about 4,000 beds.

WAR NOTES

Hospital Aid for Russia.—A group of Americans is furthering a movement to present Russia with a well-equipped hospital, the hospital to be under the patronage of the Grand Duchess Tatiana, the hospital to cost, including transportation and one year's maintenance, $225,000. The committee makes an appeal for subscriptions for this philanthropic work. Subscriptions may be sent to the Guarantee Trust Company, 140 Broadway, New York.

Plan Three Base Hospitals for New York.—At a meeting of the Red Cross on February 16, Mrs. E. H. Harriman gave $24,000 for the equipment of a base hospital in this city and the Red Cross of New York County will start a campaign immediately to raise $48,000 for the equipment of two others. Bellevue, the New York Hospital and the Presbyterian Hospital have agreede to cooperate with the Red Cross in this matter. It is announced that Dr. George E. Brewer of the Presbyterian Hospital, Dr. Charles L. Gibson of the New York, and Dr. George D. Stewart of Bellevue will hold themselves ready, each with nineteen physicians, forty-six nurses and 100 helpers as a medical unit in the Red Cross, to leave for any point in the world at the order of Col. Jefferson R. Kean, recently appointed director-general of military relief in the Red Cross organization.

Physicians', Surgeons' and Dentists' Fund.—A committee composed of Drs. George E. Brewer, New York; George W. Crile, Cleveland; Harvey Cushing, Boston; Joseph M. Flint, New Haven, Conn.; Walton Martin, New York, and William H. Potter, D.D.S., with Dr. Charles N. B. Camac, New York, as chairman, has sent out an appeal to physicians, surgeons and dentists of the United States asking each one to pledge himself to contribute to the fund for the relief of the physicians, surgeons and dentists of France, $2 per month for the year 1916, to be placed at the disposal of the American Relief Clearing House in Paris and to be expended as it may see fit under the advice of a representative of the French Academy of Medicine and a representative of the minister of war. The committee further solicits donations of instruments and hospital equipment of all kinds. Checks should be made payable to J. P. Morgan and Company, for P. S. D. Fund, and addressed to the fund at 16 East Forty-Seventh Street, New York, N. Y., and contributions and material should be sent prepaid to the P. S. D. Fund, War Relief Clearing House, 133 Charleton Street, New York, N. Y.

Red Cross Items.—Mr. Charles J. O'Connor, who recently handled with conspicuous success the relief work in Mexico City, has been appointed assistant director general of civilian relief.——There are said to be at present 66,449 women in the French Red Cross Volunteer Service in 1,500 hospitals with an aggregate of 118,000 beds. The Red Cross flag is said to fly over 288 buildings in Paris alone.——A dispatch to the Havas agency from Bucharest, Roumania, under date of February 17, states that "The German authorities are expelling the American Red Cross missions from Serbia."——During January the American Red Cross shipped 172,048 pounds of hospital supplies valued at $45,779 to the Red Cross societies and other reliable relief agencies in Austria, Belgium, Bulgaria, England, France, Germany, Montenegro and Russia.——Early in February the American Red Cross made two large shipments of hospital and noncombatant relief supplies to the American Relief Clearing House, Paris, for distribution in France and to the United States consul at Naples, Italy, for the Italian Red Cross. The shipment to France was made on the transatlantique steamer, *Chicago*, and that to Italy by the steamship *Caserta*.——Count Rudolf Traun, president of the Austrian Red Cross Society, under date of January 9, writes to the American Red Cross expressing his appreciation of the assurance of the desire of the Red Cross to continue to assist in relieving the distressed conditions in Europe although, owing to the shortage of funds, it has been necessary to withdraw most of the trained American Red Cross personnel.

PARIS LETTER

Paris, Feb. 3, 1916.

The War

DYSENTERIFORM DIARRHEAS IN THE ARMY

At a recent session of the Réunion médicale de la IV-e armée, an interesting discussion was held on this subject. Dr. P. Emile Weil reported that he had treated numerous patients with dysentery of average intensity who were apyretic or febrile for several days. The patients had typical evacuations, from six to forty stools per day, with few general symptoms. The treatment consisted of a diet of vegetable soup and subcutaneous injections of emetin hydrochlorid, which gave better results than any of the other remedies tried (collargol, bismuth, sodium salicylate). After from two to five daily injections of 0.04 gm. the patients recovered. The stools diminished greatly from the first injection; sometimes the movements ceased completely. These dysenteric diarrheas were sometimes due to the dysentery bacillus, sometimes to nonspecific germs. The *Ameba dysenteriae* could not be held responsible. It is interesting to know that the emetin acts on ordinary dysentery conditions as well as on amebic dysentery.

Dr. Léon Giroux observed 172 patients affected with diarrhea. Two thirds of the cases were dysenteriform diarrhea and true dysentery; the other one third consisted of apparently ordinary diarrhea and some cases of choleriform diarrhea. The urinary crisis, which is very marked, is the surest indication of early improvement in the disease. The urine, which is scanty at the acute period, increases to 2 or 3 quarts and sometimes more. This crisis is accompanied by a heavy discharge of chlorids. Patients on a standard diet with plenty of salt eliminate 10, 15 and sometimes even 25 gm. of chlorin a day. The pulse becomes slow parallel with the urinary crisis falling to sixty, fifty and even forty pulsations a minute. There is a temporary total bradycardia, the pulse and the urine returning simultaneously to physiologic level.

As treatment Giroux uses chiefly antidysenteric serum and emetin. In all cases in which dysentery is suspected he uses serum and in all others, including those in which serum is ineffective, he uses emetin in a dosage of 0.04 gm. a day. This drug has given remarkably rapid results even in cases which clinically did not appear to be true dysentery. Apart from cardiovascular treatment, Giroux recommends morphin in choleriform diarrheas. The morphin readily reduces the muscular cramps and produces a refreshing sleep.

Dr. Félix Ramond has observed about ten diarrheas which were called dysentery. The patients had many glairy, bloody stools, with pain and tenesmus. The temperature did not exceed 38 C. (100.4 F.) The facies was griped, sometimes even earthy. The stools had a very strong, putrid odor and were often frothy. Bacteriologic examination showed the absence of dysentery bacilli and amebas. Infection was by the colon bacillus and anaerobic bacteria.

The treatment is based on the fact that anaerobic bacteria do not thrive in a carbohydrate and acid medium. The diet and the medication should be such as to realize these two conditions in the alimentary canal. The diet should be deprived as much as possible of albuminoid substances (milk, eggs, meat) but should consist of carbohydrates (vegetable soup, vegetables, breadstuffs without eggs, sugar and fat). Bactericidal substances should be administered by the mouth or injected directly into the colon. The former method is the least effective. Antiseptics, such as benzonaphthol, are only slightly active. The acids, like lactic acid and sulphuric or hydrochloric lemonade, are neutralized long before they reach the colon. Bile in large doses is somewhat effective. It is better to attack the infection directly by intestinal lavage. Antiseptics (Labarraque's solution, potassium permanganate, etc.) and diluted acids may be injected. This is an efficacious measure, but difficult to handle, for the action on the already injured mucous membrane is often severe and sometimes increases the irritation. Ramond cleanses the mucosa by washing out the colon with sterilized 0.7 per cent. saline solution, and then injects about a quart of 5 per cent. lactose solution, with or without laudanum, which the patient retains as long as possible. The lactose is in part decomposed by the ordinary bacteria of the large intestine with a slow continuous production of lactic acid, which hinders considerably the growth of all anaerobic flora. This treatment is always very well tolerated. It may be repeated several consecutive days until improvement sets in. There are cases, however, which do not respond to this treatment. In these cases Ramond uses lavage with hydrogen peroxid.

It should not be forgotten, however, that therapeutics is a question of opportunity. When the infection appears to be almost under control the diet should be modified, otherwise the diarrhea will persist and the patient's strength decline. It is well at this time to increase the food and in many cases to change the diet. Ramond does not hesitate, after two or three days of carbohydrate diet, to give the patient albuminoid food in the form of raw or rare meat, or even milk products. These various substances increase the normal intestinal secretion, which is perhaps one of the greatest factors in recovery. It is even probable that for a similar reason acids and bile have some efficacy in the treatment of enteritis. He therefore prefers to prescribe them during the course of the disease rather than at the beginning.

ACUTE NEPHRITIS AMONG THE TROOPS IN THE FIELD

At a recent session of the Réunion médico-chirurgicale de la X-e armée, Drs. J. Parisot and Ameuille called attention to the cases of acute nephritis which are becoming more and more frequent in the French army (The Journal, Dec. 18, 1915, p. 2181). There were few or no cases at the beginning of the campaign, but there are now a formidable number of them. As Dr. J. W. MacLeod has observed, they are

increasing in frequency in the British army similarly. Some of these cases are accompanied by edema and anasarca with heavy albuminuria, and the patients recover readily under a suitable salt-poor diet. A large number present no edema, but manifest a very severe headache similar to that of meningitis, respiratory troubles, etc., which incline the diagnosis in another direction. These latter forms, the very serious ones, are often unrecognized at the outset. It is therefore necessary for regimental physicians to investigate urinary albumin as methodically as they investigate increase in temperature. Finally, there are also a certain number of cases of temporary acute nephritis without edema or serious complications which are characterized by transitory albuminuria and brief malaise. They would be found more frequently if they were systematically sought for. The etiology of these cases is very obscure. There is only one striking factor which is that almost all the patients have been at the front a long time. Some have not been away for sixteen months, and it may be thought that the campaign is decreasing the resistance of the kidney to the point at which it is incapable of withstanding aggressions which are not usually considered as factors in nephritis. Dr. MacLeod says that it was during February, 1915, that the rather large number of soldiers affected with nephritis in the British army began to be noticed. The number increased up to July. This increase could not be explained by the arrival of reinforcements, since these cases of nephritis were observed particularly in soldiers who had already spent six months in France. A division which had been in France since the beginning of the war had forty times more cases of nephritis in May, June and July than another which had been there only three months. The cases observed were nephritis with edema, especially transitory edema. Cylindrical casts were observed in 60 per cent. of the cases, and blood in one half of them. The disease is benign. There is about one death in 300 cases. The causes are variously stated as: (1) mere chilling; (2) chilling plus chemical intoxication; (3) chilling plus microbic intoxication; (4) direct bacterial infection of the kidneys. Although these cases increase in number in summer, some still believe that mere chilling is an important cause, because in summer the difference between the day and night temperature is greater than in winter. It may be objected that in South Africa this difference is often greater and that, notwithstanding, there were few cases of nephritis in the Boer war. Chemical intoxication may also be largely dismissed as a cause. The food has been better supervised than in the Boer war. Chemical analysis has shown the presence of no metallic or organic poisons in the food or in the drink. Possibly, however, further researches may show something new. The use of water disinfected with sodium hypochlorite should be mentioned, but there are two arguments against this as a cause of nephritis: (1) Indian troops which drink chlorinated water have no nephritis; (2) during the Civil War, when chlorinated water was not employed, cases of nephritis were as frequent as in the British army today.

LONDON LETTER

LONDON, Feb. 7, 1916.

The War

THE ZEPPELIN RAID

A fleet of six or seven Zeppelins flew over the eastern and midland counties of England, January 31, and dropped over 300 bombs, some on rural places, and others on towns. The latest returns show that 26 men, 28 women and 7 children were killed, and 48 men, 46 women and 7 children were injured. Serious damage was done to three breweries, three railway sheds, one engine shed, one tube factory, one lamp factory, and one blacksmith's shop. Minor damage, such as the shattering of glass and doors, occurred at a munition factory, at ironworks in two places, a crane factory, a harness factory, a railway grain shed, a colliery and a pumping station. No docks, granaries, munition factories or industrial establishments of any sort, other than those mentioned, were damaged. About fifteen houses of working class people were demolished, and a large number of small shops and dwelling houses were injured, some seriously and many slightly. It is not proposed in future to issue detailed statements of this character, as it is inadvisable to give information to the enemy as to the results of their air attacks. On the occasion of this raid, however, in which the largest number so far of airships have been employed, it is stated that this statement of the damage done is given in order to show how unfounded is the claim that the economic life of Great Britain or its military preparations can be appreciably affected by promiscuous bomb dropping from airships wandering over the country in the dark. In the twenty-nine raids, great and small, that have taken place over Great Britain since the war began, 133 men (of whom 17 were soldiers), 90 women and 43 children have been killed. In one house a man and his wife, with their daughter and son-in-law and their two children, were killed instantly. The bombs fell on the footpath of the narrow thoroughfare, smashing in the front of the house. The occupants, who were sitting round the fire, were mangled beneath the ruins, their bodies being recovered later by the police. A boy walking along the street received the full force of the explosion and was killed on the spot, while a man standing in front of his house some distance away also met with instant death. In another case a man was carrying on his business in a small shop, and the place collapsed and he was killed. One of the bombs, falling in a field made a hole 6 or 7 feet deep and 10 feet square. Another bomb fell in front of a public house and demolished it, but the landlord, his wife and their two sons had a wonderful escape. Every window in the house was blown out, the doors were torn from their hinges, the roof fell on the inmates in their beds, and the licensee and his wife were injured. For a time they were pinned in their room by the wreckage.

MOTOR ACCIDENTS IN THE DARKENED STREETS

In consequence of the lighting restrictions because of the Zeppelin raids, there has been a noticeable increase in the number of fatal street accidents in London. In the case of tramway cars, the increase is given as 135 per cent. In 1913, the fatal street accidents were 579; in 1914, 637, and in 1915, 867. During the first week of this year 22 people were killed in London streets; in the second week, when there was a succession of moonlight nights, there were 15, and in the third, there were only 13.

"TRENCH FEET"

The numerous cases of gangrene of the feet which occurred in the first winter of the war, in consequence of the men standing for many hours in cold water or mud, has given rise to a serious problem. At the Royal Institution Leonard Hill, the physiologist, delivered a lecture on the "Science of Clothing and Prevention of Trench Feet." He controverted the prevalent idea that cold is the cause of much illness, and said that our defensive measures against it had gone too far. Cold increased the metabolism of the body and therefore promoted the joy of life. The variations of temperature against which people were at pains to protect themselves were beneficent, and danger lay in windless or stagnant air and in the skin being the same temperature all over. Men in our army, who had been accustomed to sedentary lives in a confined atmosphere, gained in appetite, growth and color under exposure; but they were subject to the danger of trench foot, which was due not only to rapid cooling of the surface but of the whole limb, especially through water soaking into the tissues and damaging their vitality. Grease could be used to keep the water out, and the natural grease in the skin also helped; but when boots were full of water for prolonged periods the grease got used up, and the tissues, being penetrated by water, were attacked by bacteria. He commended the Italian method of covering the feet with a fabric soaked in grease to prevent the water from entering the tissues. If the soldier was standing in mud, the place in which he stood became to some extent warmed, and this gave a certain degree of protection; but in running water the conditions were much worse. The problem was how to keep out both wet and cold, and in regard to temperature there was not so much importance in the kind of fabric for clothing as in its capacity for retaining dry air. He described and illustrated the garments used in Labrador. The footgear consisted of elastic, watertight skins in two or three layers, which held dry air. In contrast with this excellent method was the army boot, which was hard and close fitting and had plenty of metal to increase its conductivity. Some form of wader on the Labrador principle, in combination with stockings soaked in oil, was to be recommended.

THE MAN WHO MADE QUININ CHEAP

Sir C. Markham has died at the age of 85, from burns due to a fire caused by reading in bed by candlelight. He entered the navy in 1844, and served in the Franklin search expedition in the arctic regions. He was a great traveler and writer on geographic subjects. In 1852 he made his first visit to Peru, mainly to inquire into the remains of the Incas. When the government of India perceived the value of quinin

in malaria, it determined to introduce the cinchona plant into that country from Peru. Sir Clement Markham was entrusted with the task, which he carried out most successfully, with the result that the price of quinin was reduced from many shillings to a few pence per ounce. The service thus rendered by him to humanity has been everywhere recognized.

BERLIN LETTER

Berlin, Jan. 26, 1916.

The War

THE BLINDED SOLDIER

Among the badly injured and crippled soldiers those who have become blinded are receiving considerable attention. Measures have been adopted to make easier the lot of these unfortunates. The government has decreed that every blinded soldier will receive a yearly pension of 1,368 marks ($342); noncommissioned officers receive from 60 to 360 marks additional. The annual pension of a blinded officer is at least 4,000 marks ($1,000). Many of these unfortunates are also entitled to the invalids' pension provided for by the workmen's compensation laws. Every blinded soldier who, previous to his admission to the army, was engaged in an occupation coming under the compensation act may demand the legal pension, which is not less than 150 marks ($37.50) per year, and may be as high as 300 marks ($75). Private donations have helped to raise the funds necessary to meet these expenditures. The call issued in March, 1915, asking for donations, has been answered to the extent of 2,750,000 marks ($687,500). The fund for the blind, established by the German Society for National Education, which has amounted to about half a million marks ($125,000) purposes to assist the blind until such time as the state assumes the obligation by giving them suitable employment. They will be taught how to write so that they can qualify for telephone operators, typists and masseurs. Those who are musically inclined will be given instructions in music. The medical men have raised some objection to increasing the number of masseurs because there are already too many, and the blind masseurs might not be able to secure any employment, although in Japan they have as much work as they can do. It was pointed out, however, that conditions in Japan are entirely different from what they are in Germany.

Another organization interested in this work is the Society for the Blind, whose headquarters is in Hamburg. This society will interest itself particularly in taking care of the blind soldiers when they leave the hospitals but are still convalescing and unable to take any employment. It is planned to form small groups, each group being in charge of a blind person who is thoroughly trained in this work, and send them to some *Pension* for from four to six weeks with the object of restoring the lost mental equilibrium so that the soldier will be placed in position where he can return home and take up the work of learning such trade as he may wish with energy and a mind at rest. Prussia has sixteen institutions for the blind. In 1910 there were 4,000 inmates. In the same year there were 21,000 blind in Prussia.

NUTRITION OF CHILDREN

Dr. Hepner has published observations made in regard to the state of nutrition of the children of Mannheim who are just entering on school life. Comparing 500 children who entered school at Easter, 1914, with a similar number for 1915, he found that the average weight for 1915 was exactly the same as for 1914.

THE FOOD PROBLEM

The increased cost of provisions has raised the hospital rates at many points. At the Schöneberger hospital the price for the residents of the city has been raised 50 pfennige (about 12 cents), and for nonresidents 1 mark (25 cents) per day, so that hereafter the day rate will be 3½ marks (88 cents) and 4½ marks ($1.13), respectively. This increase is trifling.

There has to be some restriction in the use of fat and butter. It goes without saying that every one must practice economy and exercise good judgment and even suffer some restriction in the use of all kinds of provisions, and there naturally must be a slight increase in their price. That starvation is still a remote problem is shown, further, by the food given to prisoners of war. The daily rations provided for some time ago have remained unchanged. Every person receives daily 90 gm. of albumin (formerly 85), 30 gm. of fat (formerly 40), 500 gm. of carbohydrates (formerly 475), and 10 per cent. is added for persons who are working, or such as are poorly nourished. The government purchased the more essential food products and staples outright through the ministry of war, so that each prison camp is placed on the same basis, so far as food is concerned, and there is no misuse of anything sent to them. Germany is now taking care of about 1,500,000 prisoners of war, and to feed these there are required daily about 600 head of cattle, 900 hundredweights of bread and 30,000 hundredweights of potatoes. The letters sent home by prisoners of war show that very few of them have lost in weight since their capture. In many of the prison camps the meals are prepared and served from a central kitchen. In a few the cooking apparatus is of the most modern kind, such as steam cooking. Most of them use the "kettle over the fire" method, each kettle having a content of about 500 quarts. Some camps have their own bakeries, and often kill their own cattle. The principal meal is served at noon. It consists of potatoes, vegetables and meat. Twice each week fish is served instead of meat. For example, the meals for Sunday consist of: breakfast—300 gm. of bread; 5 gm. of coffee, 10 gm. of chickory, and 25 gm. of sugar; dinner—120 gm. of beef (with bones); 300 gm. of kohlrabi or carrots, and 750 gm. of potatoes; supper—200 gm. of bread and 100 gm. of cheese. Monday: breakfast—300 gm. of bread; soup with 50 gm. of corn flour; 35 gm. of sugar, and 100 gm. of skimmed milk; dinner—150 gm. of fish; 750 gm. of potatoes; 30 gm. of soja bean oil, and 50 gm. of horseradish; supper—soup with 30 gm. of barley; 30 gm. of soja bean flour; 100 gm. of margarin, and 400 gm. of potatoes. The cost per day is 66 pfennige (16 cents) for privates and 1 mark 40 pfennige (34 cents) for officers.

Association News

BY AUTOMOBILE TO DETROIT

Arrangements by Subcommittee on Automobiles

Detroit, first among the cities of America in the production of automobiles, estimates that 705,000 automobiles were manufactured within its limits in 1915. It is not surprising, therefore, that the city takes an interest in maintaining excellent roads, and offers country drives which extend in every direction beside lakes and rivers, and over the hills, to numbers of charming resorts, as well as to cities and villages.

The fine roads will tempt physicians to use their automobiles in going to Detroit from great distances, certainly from cities as far off as Buffalo, Chicago or Cincinnati. In order to assist these physicians to find the accommodations they need, the local Committee on Arrangements has appointed a subcommittee on automobiles, and suggests that physicians who desire to make reservations of garage space, or who need advice concerning other matters of interest in connection with going to Detroit by automobile, address the chairman of the subcommittee at 33 High Street, East, Detroit. It is desired to arrange for these reservations at as early a date as possible. The rates for service are stated to be:

Storage, 24 hours	$0.75 to $1.50
Washing and polishing cars	1.50 to 2.50
Labor on repairs, etc	.75 per hour

Marriages

Francis Henry Boucher, M.D., to Miss Marie Elizabeth McKeever, both of Marshalltown, Iowa, in Mason City, February 12.

Albert O. Holmes, M.D., Long Beach, Calif., to Miss Sadie O. Worley of San Bernardino, Calif., February 19.

William Edgar Holland, M.D., Fayetteville, Pa., to Miss Nettie Schaal of Waynesboro, Pa., February 7.

Hatley Norton Mason, M.D., to Miss Frances Lockert Bemiss, both of Richmond, Va., February 15.

Eugene Phillips Neitz, M.D., to Miss Winifred Gladys Shurtleff, both of Cleveland, February 22.

Edward Scott O'Keefe, M.D., Lynn, Mass., to Miss Ruth Evans of Boston, January 4.

Deaths

Robert Allen Blood, M.D., George's Mills, N. H.; Harvard Medical School, 1870; aged 77; a member of the Massachusetts Medical Society and president of the Association of Military Surgeons of the United States in 1902; a veteran of the Civil War; surgeon-general of Massachusetts from 1896 to 1904 when he was retired with the rank of major general; after his retirement, appointed surgeon in chief of the Massachusetts Soldiers' Home, Chelsea; died suddenly at his home, February 21.

Hugo Philler, M.D., Minneapolis; University of Greifswald, Germany, 1861; aged 78; formerly a member of the State Medical Society of Wisconsin; local surgeon of the Chicago, Milwaukee and St. Paul System at Waukesha, Wis., and health commissioner of the city; assistant surgeon of the Forty-Fifth New York Volunteer Infantry during the Civil War; for eight years a resident of Minneapolis; died in the Minnesota Soldiers' Home in that city, February 17.

Rufus H. Smith, M.D., Seattle, Wash.; College of Physicians and Surgeons, Baltimore, 1877; aged 64; a retired practitioner and capitalist; who had resided in Seattle since 1899; for six years chief surgeon of the Great Northern and Columbia and Puget Sound railroads; a member of the legislature from King County and president of the Senate in 1903; died in the Seattle General Hospital, February 12.

John R. Williams, M.D., White Pigeon, Mich.; College of Physicians and Surgeons, Chicago, 1886; aged 66; a member of the Michigan State Medical Society and formerly president of the St. Joseph County Medical Society, and vice president of the Tri-State Medical Society; local surgeon of the Lake Shore and Michigan Southern Railroad at White Pigeon; president of the St. Joseph County Board of Health; died at his home, February 16, from heart disease.

Charles Magill Schindel, M.D., Omaha; Bellevue Hospital Medical College, 1887; aged 52; a member of the Nebraska State Medical Association; president of the Live Stock National Bank from 1907 to 1909; and for several years president of the board of education; who went West on account of his health about six weeks before; died in Spokane, Wash., February 11, from cerebral hemorrhage.

William B. Church, M.D., Gary, Ind.; Eclectic Medical Institute, Cincinnati, 1866; aged 78; assistant surgeon of volunteers during the Civil War; formerly professor of physical diagnosis in the California Medical College, San Francisco, and professor of didactic surgery in his alma mater; for many years a practitioner of Michigan, but since 1911 a resident of Gary; died in Chicago, February 16.

William McKay, M.D., Reserve Mines, N. S.; Bellevue Hospital Medical College, 1873; aged 68; formerly president of the Cape Breton (N. S.) Medical Society and of the Nova Scotia Medical Association; for seven years a member of the legislature of Nova Scotia from Cape Breton and at the time of his death a member of the Canadian Senate; died at his home, November 8, from heart disease.

William L. Kneece, M.D., Baxter, S. C.; Medical College of Georgia, Augusta, 1883; aged 64; a Fellow of the American Medical Association and a charter member, and for several years president of the Lexington County (S. C.) Medical Society; for more than thirty years a practitioner and druggist of Baxter; died at his home, February 4, from cerebral hemorrhage.

John F. DeBra, M.D., Dayton, Ohio; Medical College of Ohio, Cincinnati, 1870; aged 78; for half a century a practitioner, the first part of his time having been spent as acting assistant surgeon, U. S. Army at Fort Reno, Okla.; for more than twenty years a practitioner of Dayton; died at his home in that city, February 14, from cerebral hemorrhage.

Stephen F. Carpenter, M.D., St. Joseph, Mo.; University of Louisville, Ky., 1871; aged 70; formerly a member of the Missouri State Medical Association and professor of theory and practice of medicine in the Ensworth-General Medical College, St. Joseph; from 1884 to 1886 a member of the city council; died at his home, February 15, from cerebral hemorrhage.

Anthony Freeland, M.D., Ottawa, Ont.; Queens University, Kingston, Ont., 1889; aged 59; who retired from practice in 1902 to become collector of customs for the port of Ottawa; a member of the Separate School Board; died at his home, November 3, from angina pectoris.

Perry Joshua Payne, M.D., Portland, Ore.; Rush Medical College, 1904; aged 44; a Fellow of the American Medical Association; for five years physician and physical director of the Portland Academy and for the last two years medical inspector of the Portland public schools; died in the Good Samaritan Hospital, Portland, February 12, from pneumonia.

C. Ash Levering, M.D., Ashland, Ohio; Starling Medical College, Columbus, Ohio, 1888; aged 49; county treasurer of Ashland County, Ohio, for two terms and thereafter cashier and vice president of the Ashland Bank and Savings Company; died in the Samaritan Hospital, Ashland, February 13, six days after an operation for appendicitis.

James Edwin Medden, M.D., Seneca Falls, N. Y.; Long Island College Hospital, Brooklyn, 1895; aged 56; a member of the Medical Society of the State of New York; formerly president of the Seneca County Medical Society; a member of the board of supervisors of Seneca Falls; died at his home, February 11, from septicemia.

William Ernest Morris, M.D., Lisbon, Ohio; Toledo (Ohio) Medical College, 1900; aged 56; a Fellow of the American Medical Association; a charter member and for many years secretary and treasurer of the Columbiana County Medical Society; died at his home, February 18, from acute suppurative otitis media and pneumonia.

David P. Miller, M.D., Huntingdon, Pa.; Jefferson Medical College, 1864; aged 79; a charter member of the Huntingdon County (Pa.) Medical Society; surgeon of volunteers during the Civil War; local surgeon of the Pennsylvania System, and Huntingdon and Broad Top Railroad; died at his home, February 16, from uremia.

Oscar G. Singleton, M.D., Fort Valley, Ga.; Vanderbilt University, Nashville, Tenn., 1891; aged 58; a Fellow of the American Medical Association; local surgeon at Fort Valley for the Central of Georgia Railroad; while returning from Macon, February 12, was instantly killed by the overturning of his automobile.

W. W. Anderson, M.D., Summerton, S. C.; Medical College of the State of South Carolina, Charleston, 1868; aged 71; for many years a practitioner of Statesburg, S. C.; but for the last quarter of a century a resident of Summerton; died at the home of his daughter in that place, February 9.

James Mecray, M.D., Cape May, N. J.; University of Pennsylvania, Philadelphia, 1865; aged 73; a member of the Medical Society of New Jersey; a veteran of the Civil War; formerly councilman and city treasurer of Cape May; died at his home, February 9, from cerebral hemorrhage.

Alanson George Aldrich, M.D., Anoka, Minn.; College of Physicians and Surgeons, Baltimore, 1879; aged 59; a Fellow of the American Medical Association; a specialist on diseases of the eye, ear, nose and throat with offices in Minneapolis; died at his home, February 19.

Hiram A. Barber, M.D., Hastings, Mich.; Hahnemann Medical College, Chicago, 1881; aged 73; a veteran of the Civil War and once health officer of Hastings; died in a hospital in Grand Rapids, February 21, several weeks after a surgical operation.

Lewis W. Finch, M.D., Eupora, Miss.; Memphis Hospital Medical College, Memphis, Tenn., 1902; aged 36; formerly a Fellow of the American Medical Association; a member of the Mississippi State Medical Association; died at his home, February 15.

Thomas S. Dekle, M.D., Thomasville, Ga.; Medical College of Georgia, Augusta, 1868; aged 73; a Confederate veteran and one of the oldest residents of Thomasville; died at his home in that place, February 12, from pneumonia following influenza.

Alfred M. Young, M.D., Salem, N. Y.; Albany (N. Y.) Medical College, 1862; aged 79; a Fellow of the American Medical Association; for many years health officer of Salem; died at his home, February 16, from disease of the kidney.

D. H. Hall, Chattanooga, Tenn. (license, Tennessee, 1889); aged 85; for more than sixty years a practitioner of the Sequatchie Valley, Tenn.; died in the Woolford-Johnson Sanitarium, Chattanooga, February 17, from pneumonia.

William F. Bedell, M.D., Jacksonville, Fla.; New York University, New York City, 1867; aged 76; formerly of Brooklyn; died at the home of his son in Jacksonville, Fla., January 22, from rupture of an aneurysm of the aorta.

Joseph Q. Cooper, M.D., Centralia, Mo.; St. Louis University, 1905; aged 34; a member of the Missouri State Medical Association; was shot and killed in Centralia, February 14, in an altercation with the city marshal of Centralia.

Wesley Allen, M.D., West Newton, Ind.; Indiana Medical College, Indianapolis, 1873; aged 79; a Fellow of the American Medical Association and one of the oldest practitioners of Indiana; died at his home, February 22.

Richard S. Grimes, M.D., Lincoln, Neb.; Bennett Medical College, Chicago, 1873; aged 63; for thirty-eight years a practitioner of Lincoln, Neb.; for several terms physician of Lancaster County; died at his home, February 14.

Neil Baker Sewell, M.D., Buyk, near Wetumpka, Ala.; Vanderbilt University, Nashville, 1886; aged 64; a member of the Medical Association of the State of Alabama; died in an infirmary in Montgomery, Ala., February 15.

Sumner Edwards, M.D., MacMahan, Me.; Harvard Medical School, 1915; aged 26; medical house officer at the Peter Bent Brigham Hospital, Boston; died in that institution, January 6, from lobar pneumonia.

John Koplitz, M.D., Middletown, Conn.; Ludwig-Maximilians University, Munich, Bavaria, 1847; aged 93; believed to have been the oldest practitioner of Connecticut; died at his home, February 10.

George Robert Dunlap, Kendallville, Ind. (license, Indiana, 1897); aged 83; a practitioner of Kendallville for forty-four years; died in the Noble County Infirmary, January 24, from cerebral hemorrhage.

John C. Krieger, Jr., M.D., Cincinnati; Medical College of Ohio, Cincinnati, 1888; aged 65; a well known alienist; died in the German Deaconess Hospital, Cincinnati, February 10, from nephritis.

James W. Conger, Talmage, Neb.; formerly of Burr, Neb. (license, Nebraska, 1891); aged 85; for more than half a century a practitioner of Nebraska; died at his home, January 26.

Allen E. Baker, M.D., Auburn, N. Y.; New York Homeopathic Medical College, New York City, 1888; aged 53; died at his home, December 15, from chronic interstitial nephritis.

Wilbur A. Beard, M.D., Chicago; Hospital College of Medicine, Louisville, 1901; New York Homeopathic Medical College, New York City, 1904; aged 39; died about February 2.

Bartley B. Yost, M.D., Rowley, Iowa; St. Louis College of Physicians and Surgeons, 1898; aged 43; also a graduate in pharmacy; died at Glenville, Los Angeles, Calif., February 7.

Thomas C. Hightower, M.D., Campti, La.; Louisville Medical College, 1898; aged 41; a member of the school board and town council of Campti; died at his home, February 2.

William A. McCallister, M.D., Centralia, Mo.; Missouri Medical College, St. Louis, 1879; a Fellow of the American Medical Association; died at his home about February 16.

John William Dorough, M.D., Girard, Ala.; Atlanta (Ga.) Medical College, 1894; aged 48; formerly a practitioner and druggist of Tallassee, Ala.; died at his home, February 6.

Walter Morris Litchfield, M.D., Salamanca, N. Y.; University of Buffalo, N. Y., 1886; aged 53; well known as a physician and oil producer; died at his home, February 9.

W. D. Wright, M.D., Powder Springs, Ga.; Atlanta (Ga.) Medical College, 1884; aged 66; died at his home near Lost Mountain, Ga., February 4, from cerebral hemorrhage.

Ellis Augustus Squier, M.D., Frankfort, Ind.; Eclectic Medical Institute, Cincinnati, 1888; aged 67; died at his home, February 14, from pneumonia.

Lucius J. Landes, M.D., Grand River, Iowa; Marion-Sims College of Medicine, St. Louis, 1892; aged 48; died at his home, November 5, from embolism.

F. H. Morton, M.D., Okmulgee, Okla.; Memphis Hospital Medical College, 1901; aged 42; died at his home, February 8, from pulmonary tuberculosis.

August Hilary Meath, M.D., Chicago; Rush Medical College, 1888; aged 53; died at his home, February 16, from lobar pneumonia.

James E. Blaydes, M.D., Covington, Tenn.; Jefferson Medical College, 1862; aged 80; died suddenly in Covington, February 7.

Humphrey Fall Brackett, M.D., Brighton, Boston; Boston University School of Medicine, 1884; died at his home, January 31.

Francis O. Reddin, M.D., Hamler, Ohio; Louisville, (Ky.) Medical College, 1890; aged 53; died at his home, February 12.

W. H. Owen, Nashville, Tenn. (license, Tennessee, 1910); died at his home, February 1.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

"DRUG REFORM"

As it Appears to the Cleveland Medical Journal

The matter which follows appeared originally as an editorial in the *Cleveland Medical Journal.* It expresses, we believe, the attitude of the thinking physician toward the subject discussed:

Physicians have come to the realization that drugs are as a two-edged sword—under proper conditions, striking against the disease; otherwise, against the patient's health. The first condition for their proper use is adequate knowledge of their composition and purity; of their actions and malefactions; their field and limitations. Slowly and painstakingly—sometimes painfully—this scientific knowledge has been gathered, is still being gathered, by chemists and pharmacists, pharmacologists and clinicians, with increasing thoroughness, care and discrimination.

Where wisdom fears to venture, unwisdom and cupidity find ample room. The wise physician knows that there are ills that drugs cannot cure; that drugs generally only aid or relieve; and that to obtain even this aid efficiently and safely, the existing scientific knowledge is none too great. Not so the unwise. He who sees in disease only a name, to him a name is a sufficient cure. Let there be a mixture with a convenient and suggestive name and a pleasant taste, a compendious index of diseases and symptoms—and a lively imagination—and the cure is accomplished. Few things could be easier, and few more false. It is not surprising that the "man on the street" should fall into these errors; it is sad that any physician should be misled by the sophistry of interested drug vendors.

Physicians have the moral obligation to instruct the public in matters of health. Preaching before practice is of little avail. It behooves the medical profession to make at least a reasonable effort to clean its own house before it passes the broom to the public. Realizing this responsibility, the American Medical Association some years ago established its Council on Pharmacy and Chemistry. This Council is strictly an educational agency—it collects and disseminates knowledge about drugs, especially those drugs that are advertised to physicians and that are not described in the legal pharmacopeias. Physicians are thus put in a position to discriminate. Many have done so; others will; a few may never see the light on this earth.

Journals can no longer claim that they mislead their readers in good faith. Some—the *Cleveland Medical Journal* among the first—have frankly acknowledged their obligations, and sacrificed a lucrative income from advertisements; others are still occupied in compounding the matter with their conscience. Manufacturers are in a similar position. Those who are on the side of scientific progress—or to put it materially, those who realize that honesty is the best policy—are taking the opportunity to separate themselves from the dishonest and ignorant.

Altogether, the medical profession may safely advise the public on the subject of drugs without laying itself open to the charge that it preaches what it is unwilling to practice.

Meantime, the public itself has had a somewhat similar awakening. The progress of the profession has necessarily spread more or less to the laymen. All sorts of educational agencies have been working to convince the public that individual and national health is too precious an asset to be entrusted to any quack who may spell his praise in printer's ink. Legislators have passed food, drug, and anti-narcotic laws which have aroused interest and discussion. Even the

"drugless cults" have somewhat offset their harm by causing the public to reflect that drugging is not a panacea for all ills. All this has not been without effect. The public is in a receptive mood; it is not convinced, but wishes to learn. Legislators are prepared to follow public opinion. The purveyors of patent medicines are watching events.

What, under these conditions, should be the attitude of the medical profession? Plainly, it should continue to be what it always has been: to stand aggressively for the protection of the public health, without any compromise. In doing so, it is true, physicians will expose themselves to the imputation of selfish motives. Selfishly commercial minds cannot or will not understand the unselfish ideals of a profession—that is their loss. Physicians, however, must be careful not to give a semblance of reason to the charge; for that would diminish the effect of their attitude. They must confine themselves to informing the public of the facts; and to guarding the health of the public at large, and of their own patients in particular.

No one, in a free country, can force a diseased individual to seek effective treatment or prevent him from using an ineffective treatment, unless his disease imperils the health of others. At that point, and not before, the government can and should take personal measures. However, it is a well recognized function of the government to protect individuals against their own ignorance. It does this when it forces the child to go to school; it does this when it places the swindler in jail.

On exactly the same principal, the government has the right and the duty to protect the uninformed public against the flagrant evil of the patent medicine traffic—and the patent medicine traffic as now carried on is a flagrant evil and series of evils. The government should protect the public against advertisements that are framed to suggest or create imaginary ailments, with their attendant miseries; it should protect the public against being deluded by false promises of cure; against the specious relief that merely hides the disease and blinds the patient to its dangers; against drugs that may and do work positive harm; against the veil of mystery that makes these abuses possible.

The individual layman cannot protect himself against these dangers, and has a right to expect that the government will prohibit the indiscriminate sale of any medicine that may be harmful to him. He has a right to expect, when the government permits the sale of a patent medicine, that the medicine will do him no harm; just as he has a right to expect that any physician whom the government permits to practice, should be competent.

These are some of the reasons why physicians oppose patent medicines as they are now exploited; and for these reasons, physicians should take an absolutely uncompromising attitude, and use every opportunity to educate the public. The patent medicine interests naturally try to obscure the issue. By the art in which they are so skilful, they aim to suggest to the public that physicians are opposed to patent medicines, in order to drive patients to their offices. They "forget" to mention that physicians have never conducted a "campaign" against really efficient preventive public-health measures, no matter how many prospective patients were involved. No physician has ever refused to give diphtheria antitoxin because this would diminish the number of his visits. A short memory is a very convenient asset for self-interested persons. It is not so convenient for the public—but it is all too frequent. Physicians must, therefore, make it plain that their stand is not against patent medicines, but for the protection of the health of the public.—*Cleveland Med. Jour.*, November, 1915.

Conservation of Human Health.—Our government has conserved about everything in our country except human health. It conserves the streams, its lands, its forests, and its animals; but man, for whom all these things should be conserved, is neglected or left for the last consideration.—John W. Duke, *Jour. Oklahoma State Med. Assn.*, February, 1916.

Correspondence

Strontium Salicylate versus Sodium Salicylate

To the Editor:—My attention has been called to an article by Dr. M. A. Blankenhorn (THE JOURNAL, Jan. 29, 1916, p. 331) in which the author quotes the eleventh edition of Wood's "Therapeutics" and the eleventh edition of my book on therapeutics concerning strontium salicylate as being a satisfactory substitute for sodium salicylate, chiefly on the ground that it is less disagreeable to the taste and less irritant to the stomach than the latter drug. He attempts to controvert this view. He also says that the statements made have been "lugged along" from one edition to another from no well-established starting point, although, in the quotation from my book, it is distinctly stated what I, myself, have found to be facts.

As THE JOURNAL has called attention to this article in its editorial columns, and as the article in no way controverts the statements made by Dr. Wood and myself, it may not be unwise to point out certain fallacies in the author's experiments and conclusions. He gives a table of twenty-three cases treated with strontium salicylate in combination with equal amounts of sodium bicarbonate. These twenty-three cases, in the majority of instances, have nothing whatever to do with acute articular rheumatism or any of the conditions in which the salicylates are commonly employed. Out of the twenty-three there are only eight of acute articular rheumatism, and the others vary from cervical adenitis to lobar pneumonia and gonorrheal arthritis. Although the conclusion is reached that strontium salicylate is no better, so far as the stomach is concerned, than the sodium salt, no comparative experiments as to the sodium salt are recorded and nothing is said in regard to the condition of the liver, stomach and intestines in these patients. Some patients suffering from diseases in which these doses were given would vomit even if food was placed in the stomach. It is surprising to find that a woman of 48, suffering from lobar pneumonia, who received 20 grains of strontium salicylate every hour until she had taken 160 grains, had only slight antipyresis, slight relief of pain, and nausea, and also it is surprising that a girl of 16 suffering from acute endocarditis experienced only "slight nausea" after she had received 20 grains of strontium salicylate every hour until she had taken 500 grains. Is this not a tribute to the correctness of the statement that strontium salicylate is not irritating to the stomach, particularly when it is recalled that this child also got 500 grains, or more than an ounce, of sodium bicarbonate at the same time? If the author will take 20 grains of sodium salicylate and 20 grains of sodium bicarbonate, while in perfect health, every hour until he has taken 500 grains of each, I think he will find that such a dose will upset his stomach in health to a greater extent than the "slight nausea" which the 16-year-old girl experienced.

So far as I have been able to discover, the paper does not give any facts which justify the conclusion that the mean toxic dose of strontium salicylate is the same as that for sodium salicylate. On the contrary, it is stated by the author that it is one-fifth less in strength. Neither Wood nor myself claim that it is any more effectual in the relief of pain than the sodium salicylate as is intimated.

In Table 2 the author states that the mean toxic dose of synthetic sodium salicylate is 180 grains and of natural sodium salicylate 200 grains, but earlier investigations published in THE JOURNAL have indicated that there was no advantage in one over the other.

The way to determine whether a drug possesses advantages or disadvantages as compared to another drug is not to give it until symptoms of intoxication appear, nor will correct results be obtained by giving one drug in a series of cases without giving the other drug in a series of identical cases.

It would seem that the most important result obtained from this research is the discovery that a 16-year-old girl with acute endocarditis can take 500 grains of strontium salicylate in twenty-five hours with no bad symptoms except "slight

nausea" and some "tinnitus," and with the advantage of having marked relief of pain. And, furthermore, it would be interesting to discover why a girl of 16 years should receive a toxic dose of anything, and particularly of a drug for which there was no indication, as given in the report.

As my clinical experience still leads me to believe that strontium salicylate can be taken by patients who are unable to take sodium salicylate, and as Dr. Blankenhorn's experiments actually confirm this view, it is my intention, to use his phrase, to "lug along" this belief until more convincing evidence that it is erroneous is presented.

The question as to whether strontium salicylate is better tolerated by the stomach than sodium salicylate hardly justifies the length of this communication, which is intended as a protest against the reaching of dogmatic conclusions based on evidence which is largely fictitious, the result being that the casual reader is misinformed, and discards a drug which, possibly, may render him good service in time of need.

H. A. Hare, M.D., Philadelphia.

Strontium Salicylate versus Sodium Salicylate—A Reply

To the Editor:—Inasmuch as Dr. Hare criticizes mainly the methods employed by Dr. Blankenhorn, for which I was largely responsible, I may be pardoned for assuming the privilege of saying a few words in defense.

From Dr. Hare's concluding sentence there emerges at least one clear and direct statement. The "protest against the reaching of dogmatic conclusions based on evidence that is largely fictitious" is not easily misunderstood. It is to be regretted that Dr. Hare was not equally clear in giving the reasons for his sweeping conclusions.

So far as I am able to gather from his letter, he bases them on the following "fallacies" that he thinks Dr. Blankenhorn committed in his endeavor to compare the relative gastric effects of strontium and sodium salicylate.

First: That Dr. Blankenhorn employed the drug in cases which, "in the majority of instances, have nothing whatever to do with acute articular rheumatism or any of the conditions in which the salicylates are commonly employed." Any one who will glance at the table will be profoundly surprised at this statement, coming from Dr. Hare. However, even if it were true, it would have no bearing on Dr. Blankenhorn's conclusions; unless, indeed, Dr. Hare is prepared to demonstrate that the conditions in which he considers salicylates indicated have some peculiar quieting effect on the stomach.

Second: That no control experiments with sodium salicylate are recorded. I can only conclude that Dr. Hare must have read essential portions of the paper very superficially; or does he consider as nothing the 400 patients from the Lakeside service, as recorded by Hanzlik?

Third: He asserts that "some patients suffering from diseases in which these doses were given would vomit if food was placed in the stomach." This also has no bearing on the present investigation; for these patients did take their food without any disagreeable results until a certain dosage of strontium salicylate was taken.

Fourth: Dr. Hare is surprised that one woman took a total of 160 grains, another woman 500 grains, of strontium salicylate, with only slight nausea. He will probably be further surprised by the patient who took 1,300 grains of sodium salicylate before emesis appeared (as reported by Hanzlik). Such cases are exceptional, but not rare. Dr. Hare may be perfectly correct as to Dr. Blankenhorn's personal reaction to salicylates; but why introduce personalities into a scientific discussion?

Fifth: Dr. Hare states that "the way to determine whether a drug possesses advantages or disadvantages as compared to another drug is not to give it until symptoms of intoxication appear." The statement appears a little paradoxical. At all events, our problem was to determine the relative average dose of the two salicylates which would produce the gastric and other so-called "toxic" side effects of salicylates. That would seem to require the determination of the relative doses that do produce these side-effects.

Sixth: I almost suspect that the great importance which Dr. Hare attaches to the case of the young lady of 16 years is intended as a gentle irony. However, since he feigns such a lively interest in her, I may add that so far as known, she has recovered completely from the slight nausea and tinnitus, and the "marked relief of pain" which she experienced did not prove really deleterious to her. We even feel justified in regarding this marked relief as an indication for the use of the drug. If Dr. Hare feels offended by the words "toxic dose," he may substitute "physiologic dose," as in the present connection they are used synonymously.

In conclusion, I venture to plagiarize a part of Dr. Hare's own concluding sentence, which I fully endorse.

"The question as to whether strontium salicylate is better tolerated by the stomach than sodium salicylate hardly justifies the length of this communication, which is intended as a protest against the reaching of dogmatic conclusions based on evidence which is largely fictitious, the result being that the casual reader is misinformed."

Torald Sollmann, M.D., Cleveland.

First Aid in Accidental Wounds

To the Editor:—In industrial enterprises, scientific bookkeeping and good records may demonstrate the economic value of a uniform scheme of first aid and a standardized surgical method in the treatment of accidental wounds. It is quite possible that the saving may be sufficient to allow increase in wages and diminution in the price of commodities and rates, and even leave a good balance toward dividends and sinking fund.

I was recently informed that a great electric railroad company in the West retrenched at the onset of the present war. The company employed very few new motormen and conductors, and used every means to keep their old men on duty. They were surprised to find within one year a tremendous reduction in the number of accidents. This forced retrenchment brought forcibly to their notice the economic importance of trained and experienced motormen and conductors. They immediately increased the wages of these more experienced men, and spent more time and money on the preliminary training of new men. The saving in money, therefore, was partly used for increased wages and not for avoidable accidents.

A number of railroads in this country have for years given first aid instruction, and have developed a wonderfully organized and efficient surgical and medical department. Others have not. The development of the immediate and efficient care of accidents in mines has been greater than in railroads. This information I get from an authority in the Bureau of Mines. Many of the large industries which employ thousands of laborers are satisfied that the expenditure of much money on their first aid and medical departments has been an economical one.

The materials and methods employed on these different railroads, and in the mines and industries, differ to a considerable extent. Apparently more than one method will accomplish the same good results. There seems little question that if the materials could be standardized they could be manufactured at a smaller cost. When the methods of first aid and surgical treatment are made uniform, instruction of the layman and the surgeon will be a simpler process.

An infection of a simple wound of the finger may prevent an artisan from working for months. If efficient treatment will prevent the infections of the simplest wounds and thus shorten the disability, there is no question that in thousands of cases the actual saving will be thousands of dollars.

I am not in a position to prove the statements of those in railroads, mines and industries who are confident that their bookkeeping and records prove the economic value of first aid measures and a better organized medical and surgical department.

The object of the American First Aid Conference was chiefly to make a survey and ascertain, if possible, whether these opinions were correct. The conference authorized the

secretary by a resolution to make this survey. The Board of First Aid Standardization, recently appointed by the president of the United States, at its first meeting in Washington requested that the various first aid committees throughout the United States and Canada make their reports to the secretary of the conference. The secretary has no funds to help him in this survey and investigation. Personal correspondence must be restricted to the minimum on account of lack of time and money. As a matter of fact, in a large survey of this kind it is unnecessary. Means of communication can be established through circular letters and, much better, through medical journals. The secretary is sufficiently interested in the large problem to give to it the necessary time. All he asks is the immediate cooperation of those who have had large experience with accidental injuries, and especially surgeons who are connected with railroads, mines and industries. Answers to the five questions sent out in the beginning of the survey have been received from about 150 representative surgeons, chief surgeons of railroads and their associates, and surgeons connected with great mines and industries. In many of these answers we have information which demonstrates the efficient development of first aid methods and instruction.

Committees have been, or will be, appointed to represent the national and interstate surgical associations, and also to represent the various state medical societies in the United States and Canada. If possible, these committees should have the following representative members: a surgeon to a railroad or electric trolley company, a mining surgeon, a surgeon to some great industry, a civil surgeon interested in the treatment of accidental wounds, and, if possible, a surgeon who has had some experience with the treatment of wounds in the present war. There are now in this country a large number of such surgeons.

The committees of national and interstate surgical associations should confine their attention to getting the opinion and experience of their colleagues in their respective societies, on accidental wounds.

There are here two great questions for investigation:

In the first place, it is important to correlate the opinions of surgeons as to what the layman should be instructed to do in case of an accidental wound, what material should be furnished him for this treatment, and where this material should be distributed. It seems true that no surgeon would advise the layman to do anything that the surgeon would not do if he could see the wound immediately after the injury. It is also true that no one would dream of attempting to instruct the layman to do all the surgeon might. Our investigations so far demonstrate that it is of the utmost importance that we come to a conclusion—and at once—as to what these purely first aid instructions to laymen should be, and what material should be furnished.

Then there is another question in relation to first aid instruction: When shall it begin? A colleague of mine is of the opinion that it should begin with schoolchildren. At present first aid lectures are popular. Boy scouts are listening to them, young girls and women who have never before thought of these matters are now attending first aid lectures. Unfortunately, when we go over first aid instruction on different railroads, mines or industries, and read or hear of the different lectures to Boy Scouts and lay women, we find differences which must necessarily be confusing to the lay mind, and many things are taught to the laymen which, the majority of surgeons feel, may be dangerous rather than helpful.

We cannot hope to standardize unless we get a survey of the experience and opinion up to date.

In the second place, it is important to ascertain and correlate what surgeons do themselves when they have an accidental wound to treat. Here also we find a diversity of methods, both as to material for dressings and drugs for antisepsis. Even if there are many methods which accomplish the same good results, it seems possible to pick out one and standardize it. This would not impede an experienced surgeon from any initiative toward further improvement, but it would inform the great majority of surgeons as to what was considered the best now.

Undoubtedly conditions are different in railroads, mines, manufactories, on the streets of large cities and in the homes, and in the different railroads, mines and industries, but there seems no doubt that these different conditions can be met with uniformity.

The committees of the various state medical societies and those of large cities can make not only the same investigation, but also an actual survey of the conditions within their states. We should know what railroads, mines and industries have employed first aid methods, and what their results are as compared with those employers of labor who have not. These committees should stimulate scientific bookkeeping and good records of the wounds which are being treated today. I am informed by more than one chief railroad surgeon that the introduction of first aid methods has reduced the disability of the wounded from 30 to 50 per cent.

As far as I know, an investigation of this extent on a single surgical problem has never been attempted before. However, it comes naturally in the progress of the propaganda of preventive medicine in its broadest sense. There never will be a better time than now because, on account of the appalling records of wounds in the war, the interest in wounds is especially keen and widespread. On account of the environment of the wounded in war, first aid in military surgery is a much more difficult problem than first aid in peace; but there seems no question that if we develop, standardize and make uniform first aid and the surgical treatment of accidental wounds in time of peace, we are accomplishing not only surgical preparedness for a great economic movement, but also a preparedness which will demonstrate its usefulness in the emergency of war.

Every surgeon can be helpful. Every official of a company employing labor should take an interest in this movement. It seems practical, economic and humane.

The following five questions have been submitted to a large number of surgeons. In answering them the surgeon must distinguish between what he would instruct a layman to do, and what he would do himself. In many of the answers these two points have been confused. It will make the secretary's work much less difficult if the answer to each question is typewritten and on a separate page.

The different committees should not only accumulate, but also correlate their own material, so that their reports may constitute independent investigations.

These completed reports should be sent to the secretary, who will forward them to the Board of Standardization in Washington.

The questions are as follows:

1. What has been your experience with the most available first aid package and dressing for small and large wounds?

2. What has been your experience with the immediate employment of antiseptics in accidental wounds; what antiseptic have you used, in what strength, and how applied? Have you employed tincture of iodin; if so, how and what have been the results?

3. What in your experience has been the most efficient and most readily applied method of fixation for injuries of (*a*) the upper and (*b*) the lower extremity?

4. Have you considered the construction of a stretcher, which, in addition to serving as a means of transportation of injured, will have appliances for the fixation of the upper and lower extremity, somewhat along the lines of a Bradford splint, or the Gihon naval splint?

5. Please state your views on some liquid ointment dressing which would be available for first aid in large wounds and burns with the object of preventing the usual dry gauze dressing adhering to the wound and rendering subsequent dressings painless.

JOSEPH COLT BLOODGOOD, M.D., Baltimore.
Secretary, American First Aid Conference, 904 North Charles Street.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VALVULAR ENDOCARDITIS

To the Editor:—What is the most recent opinion with reference to the following question? When the auriculoventricular valves become infected and vegetations form on them, how is the infection carried to the valves? Is it by direct inoculation from the circulating blood as it flows over the valves, or is it through the nutrient blood vessels of the heart to the leaflets or valves and thence through the small capillaries which extend for a variable distance into the valves, and thence by tissue spaces, which tissue spaces are analogous to vessels from the standpoint of function? Which one of these roads do the micro-organisms travel to produce inflammation of the heart valves, or valvular endocarditis? WILLIAM A. JENKINS, M.D., Louisville, Ky.

ANSWER.—It has been the general belief that bacteria settle on the valves from the blood. By injecting a suspension of staphylococci containing particles of potato, Ribbert produced endocarditis of the auriculoventricular valves by injury, so he thought, at the lines of contact and implantation of the bacteria there. The fact that inflammation so commonly develops along the lines of contact on closure of the valves has been regarded as an indication of implantation of bacteria from the circulating blood. That endocarditis may be due to embolism, the bacteria lodging in the vessels and capillaries of the valves, has been suggested as especially likely to occur in the case of recurring inflammation in sclerotic valves in which the arrangement of the vessels might favor embolism. Köster (*Virchows Archiv für pathologische Anatomie*, 1878, lxxii, 257) was perhaps the earliest advocate of the view that endocarditis may begin as an embolic process, and experimental evidence in favor of this view has recently been produced by Rosenow (*Journal of Infectious Diseases*, 1912, xi, 210), who gives references to the most important original articles bearing on the question asked. He found that in rabbits, endocarditis after intravenous injection of certain strains of pneumococci developed on the basis of small hemorrhages into the valves, caused, he believes, by the lodgment of cocci in the capillaries of the valves, the avascular structure of which serves to protect the cocci until they grow into clumps, around which fibrin is precipitated. It is also suggested that chronic and sclerotic processes in the valves, leading to functional disturbances, may result from hemorrhages into the valves in young persons from the lodgment therein of bacterial emboli, as well as from actual endocarditis as ordinarily understood.

INSEMINATION AND CONCEPTION

To the Editor:—Under this title (Queries and Minor Notes, THE JOURNAL, Feb. 5, 1916, p. 448), you say that "it is possible for spermatozoa to retain vitality in the vagina for at least seventeen days, even through a menstrual period." Opposed to this statement is the fact that the secretion of the vagina is normally acid, and acid secretion is detrimental to spermatozoa. Even the fact that the spermatozoa are contained in an alkaline medium does not in any way help their longevity, for the amount of semen secreted is not sufficient to overcome the acidity of the vaginal secretions. Hühner has investigated the action of the vaginal secretion on the spermatozoa. According to his results live spermatozoa cannot be recovered from the vagina later than three hours after coitus. This should prove conclusively that spermatozoa cannot live in the vagina for seventeen days. Perhaps the body of the uterus was meant, but even that is doubtful. In this connection allow me to quote from Dr. Hühner: "In view of the fact that live spermatozoa are extruded from the uterus during menstruation, coitus just before menstruation is not a good time for impregnation. In fact, any spermatozoa that have not reached the fallopian tubes, or at least the ostium uteri when menstruation occurs, are lost."

CHARLES EDWARD PANOFF, M.D., Brooklyn.

To the Editor:—All of the recent studies of the corpus luteum and of the mucous membrane of the uterus at different stages of the menstrual cycle show that ovulation does not occur at menstruation, as stated in your answer to the query on "Insemination and Conception."

The beginning of the newer studies concerning the relation of menstruation to ovulation must date from the first presentation of the Born-Fraenkel corpus luteum theory (*Anatomischer Anzeiger*, 1901). The next step was the work of Hitschmann and Adler on the changes in the endometrium during the menstruation cycle (*Zeitschrift für Geburtshülfe und Gynäkologie*). Since this time a number of authors have shown that there exists such a relationship between the endometrium and the corpus luteum that it is possible to tell the condition of one from the histologic structure of the other. The functionating corpus luteum is found only in the premenstrual stage of the endometrium. Full agreement has not been reached as to just when in the menstrual cycle ovulation occurs, but as the development of corpus luteum must begin almost immediately after the rupture of the graafian follicle, it is generally agreed that ovulation is most likely to occur from seven to sixteen days after the beginning of menstruation. The following publications might be mentioned: Meyer and Ruge II (*Zentralblatt für Gynäkologie*, 1913); Carl Ruge II (*Archiv für Gynäkologie*, 1913, c, 20); J. Miller (*Berliner klinische Wochenschrift*, 1913; *Archiv für Gynäkologie*, ci), and Schroeder (*Archiv für Gynäkologie*, ci). Our authors have been slow in presenting this view of the relation of menstruation and ovulation, but in the recent work of Cragin ("The Practice of Obstetrics," 1916, p. 88), the view of Fraenkel is given and is the only one mentioned. C. S. BACON, M.D., Chicago.

ANSWER.—While it has long been known that acidity of the lower part—not of the actual secretion—of the vagina is not favorable to the life of spermatozoa, it cannot be definitely stated that the tests cited prove that spermatozoa from the premenstrual insemination are all killed by the vaginal secretion. It is known that they have sufficient mobility to reach even the fallopian tubes quickly.

The most recent of the observations cited by Dr. Bacon seem to be in conflict with each other, namely, those of Meyer and Ruge II, and Schroeder, who assert that ovulation occurs in the time of and after menstruation, while Miller is positive that it occurs just ten days before. It appears, therefore, that an answer to the difficult question of the time of conception cannot be attempted on the basis of any of the experimental work cited. Statistical studies and clinical observations still seem to furnish the most likely answer. Though such studies are by no means in accord, the balance of all evidence seems to show that actual conception usually takes place within a short period after the menses.

ARTICLES ON MEDICINE AS A CAREER

To the Editor:—Where may I obtain data on the advantages of medicine and surgery as a profession?

C. P. BLAIR, M.D., Monmouth, Ill.

ANSWER.—The following is a list of articles on this subject:

The Practice of Medicine as a Career, The Army and Navy Medical Service, *Med. Rec.*, New York, April 24, 1909.

The Third Annual Report of the Carnegie Foundation, Washington, D. C., discusses medicine as a business, medicine as a profession, ideals of the profession, etc.

McWhorter: Relation of Medicine to Other Professions, Alabama Med. Jour., Birmingham, May, 1909.

The Choice of a Profession by High School Pupils, Medical Economics, THE JOURNAL, Jan. 27, 1912, p. 298.

Allison, W. R.: Commercial Aspect of Medical Profession, *Illinois Med. Jour.*, May, 1912.

Landrum, S. H.: Lights and Shadows in Practice, *Oklahoma State Med. Assn. Jour.*, July, 1913.

Vaughan, V. C.: Service of Medicine to Civilization, THE JOURNAL, June 27, 1914, p. 2003.

PAREGORIC COMES UNDER HARRISON LAW—PRESCRIPTIONS FOR NARCOTICS MAY NOT BE TELEPHONED

To the Editor:—Enclosed find prescription.

1. Please give an opinion as to whether or not it comes under the Harrison Narcotic Law.

2. Also inform me if I can take prescriptions for narcotics from my doctors over the local telephone. R. G. T.

ANSWER.—1. The prescription enclosed contains camphorated tincture of opium as one of its ingredients, and therefore comes under the provisions of the Harrison Narcotic Law.

2. The law provides that prescriptions calling for narcotics shall be written and signed by the physician who issues them; therefore it would not be legal to fill such prescriptions given over the telephone.

Thoroughness and "Professional Service."—The most ridiculous being in the world is the doctor who, when he himself gets sick, hones and frets for a thorough examination and a well-founded diagnosis in his own case, and who, when he is well, feels his patient's pulse, looks at his tongue, measures out a supposed 5 grains of phenacetin and a guessed-at 3 grains of calomel on the point of the same knife blade that cleans his nails, picks his teeth and cuts his tobacco, and then takes his fee under the pretext that he has rendered "professional service."—Editorial, *Jour. Tennessee State Med. Assn.*, August, 1915.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, April 4-5. Sec., Dr. John Wix Thomas, 200 National Bank of Arizona Bldg., Phoenix.

CALIFORNIA: Los Angeles, April 4. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

COLORADO: Denver, April 4. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: Regular, New Haven, March 14-15. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven; Homeopathic, New Haven, March 14. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven; Eclectic, New Haven, March 14. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

DISTRICT OF COLUMBIA: Washington, April 11. Sec., Dr. E. P. Copeland, The Rockingham.

FLORIDA: Homeopathic, Jacksonville, March 10. Sec., Dr. J. B. Griffin, St. Augustine.

IDAHO: Boise, April 4. Sec., Dr. Charles A. Dettman, Burke.

MAINE: Portland, March 14-15. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MASSACHUSETTS: Boston, March 14-16. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

MINNESOTA: Minneapolis, April 4-7. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, March 20-22. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

MONTANA: Helena, April 4. Sec., Dr. William C. Riddell, Helena.

NEW MEXICO: Sante Fe, April 10. Sec., Dr. W. E. Kaser, East Las Vegas.

OKLAHOMA: Oklahoma City, April 11-12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, April 4. Sec., Dr. Quevedo Baez, 66 Allen St., San Juan.

RHODE ISLAND: Providence, April 6. Sec., Dr. Gardner T. Swarts, 315 State House, Providence.

UTAH: Salt Lake City, April 3-4. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WYOMING: Laramie, March 14-16. Sec., Dr. H. E. McCollum, Laramie.

South Carolina June Report

Dr. A. Earle Boozer, secretary of the State Board of Medical Examiners of South Carolina, reports the written examination held at Columbia, June 8-10, 1915. The total number of subjects examined in was 16; total number of questions asked, 115; percentage required to pass, 75. The total number of candidates examined was 61, of whom 37 passed and 24 failed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Atlanta College of Physicians and Surgeons	(1912)	82.4
Atlanta Medical College	(1915) 77.2, 77.4, 77.6, 78.1,	81.2
University of Georgia	(1915)	75
University of Maryland	(1913) 78; (1915)	77.6
Columbia University, College of Phys. and Surgs.	(1901)	75
Jefferson Medical College	(1915)	85.2, 85.4
Woman's Medical College of Philadelphia	(1915)	93.6
Medical College of the State of S. C.	(1911) 75; (1915) 77.2, 78.2, 78.2, 78.4, 78.8, 79.6, 80.4, 80.6, 81, 81.1, 81.5, 81.5, 81.6, 83.1, 83.1, 83.4, 84, 84.2, 84.2, 87.1, 88	
Medical College of Virginia	(1915)	75
University of Virginia	(1914)	84.7

FAILED		
Atlanta College of Physicians and Surgeons	(1912)	69
Atlanta Medical College	(1914) 67.7; (1915) 61.1, 69.8, 67.8,	73.4
Georgia College of Eclectic Medicine and Surgery	(1912)	59.5
Southern College of Medicine and Surgery	(1913) 60.6; (1914)	64.6
Maryland Medical College	(1905)	71.5
University of the City of New York	(1882)	61.8
Medical College of the State of South Carolina	(1900) 63.2; (1901);* (1911) 72.6; (1915) 71.2, 73*	
Meharry Medical College	(1914) 70.1; (1915)	*, *
Memphis Hospital Medical College	(1911)	*
University of Tennessee	(1905)	59.1
University of West Tennessee	(1914)	*
Gate City Medical College	(1909)	71.8†

* No grade.
† Graduation not verified.

Ohio October Reciprocity Report

Dr. George H. Matson, secretary of the Ohio State Medical Board, reports that on Oct. 12, 1915, 10 candidates were licensed through reciprocity and 2 candidates were granted reregistration licenses. The following colleges were represented:

College	Year Grad.	Reciprocity with
Jenner Medical College	(1912)	Illinois
Rush Medical College	(1913)	Illinois
University of Michigan Medical School	(1913) (1914)	Michigan
Baltimore Medical College	(1898)	Vermont
Kansas City Medical College	(1898)	Illinois
St. Louis University	(1913)	Missouri
Eclectic Med. Coll. of the City of New York	(1896)	New York
Medico-Chirurgical College of Philadelphia	(1913)	Maryland
University of Pennsylvania	(1914)	W. Virginia

Book Notices

FRACTURES AND DISLOCATIONS, DIAGNOSIS AND TREATMENT. By Miller E. Preston, A.B., M.D., First Lieutenant, M. R. C., U. S. Army. Chapter on Roentgenology by H. G. Stover, M.D., Professor of Roentgenology, School of Medicine, University of Colorado. Cloth. Price, $6.50. Pp. 813, with 860 illustrations. St. Louis, C. V. Mosby Company, 1915.

In this concise exposition of the subject, success has attended the author's endeavor to make the reader an eye witness to the various deformities as they appear immediately after the accident. He argues that there is much to be learned by inspection in the average case of fracture or dislocation, and that the information thus gained may be put to immediate use with a minimum amount of manipulation of the parts and without the necessity of awaiting the returns of a Roentgen examination. He maintains that the more one learns by inspection, in establishing a diagnosis in a given case, the less there remains to be determined by palpation, and that if the surgeon develops the faculty of recognizing what he sees, the patient will often be relieved of much unnecessary manipulation and suffering, to say nothing of the damage which may be inflicted on the already traumatized soft tissues. In conformity with this belief, the text is profusely illustrated with reproductions of photographs, diagrams and roentgenograms, which appear to have been selected with discrimination and which clarify and enlarge it to a marked extent.

The arrangement of the material attracts attention in that the usual custom of classifying fractures under one heading and dislocations under another has been abandoned. Instead, the reader finds all the injuries to which a given region is subject, including fractures, dislocations, joint fractures and fracture-dislocations, discussed in a single section, and he is not put to the necessity of looking up the different conditions in widely separated portions of the book, or even of consulting other volumes. This appears to be a distinct improvement on the older, conventional scheme.

In a book of this size it is, of course, impossible to discuss all the theories and arguments pertaining to the subject, or to go into detail concerning all the methods of handling the various lesions. This necessitates a somewhat dogmatic style which, harmless as a rule, occasionally leads to the omission of important matter, to detailed description of methods and theories against which serious adverse criticism has been leveled, to failure adequately to describe substitute measures, and to a few apparent inconsistencies. Surgeons are committing themselves more and more to the use of plaster in fracture work, and many would find it difficult to agree with the author when he advises anterior-posterior splints in preference to plaster in all fractures of the bones of the forearm. Similarly, while the Sayre dressing for fractured clavicle, warmly advocated by the author, is widely used, a number of surgeons of large experience condemn it, and its use has been discontinued in several large clinics. We are usually taught that in applying a Buck's extension for fracture of the neck of the femur the adhesive strips should be carried well up on the thigh the better to distribute the tension of the adhesive on the skin and to avoid undue strain on the ligaments and capsule of the knee joint. In the apparatus shown in this book, however, the entire weight of the apparatus falls on the leg below the knee. Discussing the subject of compound fractures, the author condemns unsparingly the indiscriminate use of antiseptics, and insists on free drainage. A few lines further on he advises the injection of liquor formaldehydi and glycerin into suppurating joints without drainage as the first therapeutic measure to be attempted. This hardly seems consistent, and certainly is not in agreement with the practice of many conservative surgeons of wide experience.

It must be admitted, however, that faults such as those mentioned are few, and hence of relatively little importance. There is one adverse criticism which should be strongly emphasized: there is no bibliography to direct the thoughtful student or physician, should he desire a more exhaustive discussion of the many phases of fracture work than is

offered in the text. This is an important omission in a book which deals with a special aspect of surgical practice and which should appeal to the man who happens to need special knowledge of any of the problems which this field offers.

Gunshot Roentgenograms. A Collection of Roentgenograms Taken in Constantinople During the Turko-Balkan War, 1912-1913, Illustrating Some Gunshot Wounds in the Turkish Army. By Clyde S. Ford, Major, Medical Corps. Paper. Pp. 338, with 163 plates. War Department, Office of the Surgeon General, Bulletin No. 9. Washington: Government Printing Office, 1916.

This bulletin is a collection of roentgenograms made by Major Ford, who was temporarily on duty in Constantinople with the American embassy, and on active service both in the cholera hospitals near Constantinople and later in the field with the Bulgarian army during the second Balkan War. The plates are printed on heavy paper which gives an acceptable reproduction, and there are descriptions of each. They are grouped, first, according to wounds, rifle and shrapnel; and, secondly, according to anatomic region: the head, spinal region, upper extremity, chest, pelvis and lower extremity. A limited number of the illustrations show the operative interference in gunshot wounds. The last plate shows an illustration, two-thirds the natural size, of forty-six different projectiles which were removed from wounds by Major Ford.

Appearing just at this time, the bulletin will be of interest to medical men generally and to surgeons in particular, especially those who are called on to treat gunshot wounds involving fractures. As the author remarks in the introduction, "The collection of these plates resulted from a systematic visiting of the hospitals of Constantinople in the winter of 1912-1913, during the course of the first Balkan War, and including all of the military hospitals of the military zone, with the incidental purpose of selecting from the roentgenographic plates, which had been prepared wherever apparatus was installed, such examples of the roentgenography of gunshot wounds as might show characteristic lesions without relation to detailed clinical record. More than 1,500 plates were examined, and from them more than 200 were selected as exhibiting some lesion that seemed to be characteristic of some form of gunshot wound, even though the case history could not be obtained. Some plates are included which are indistinct and generally so unsatisfactory from a technical viewpoint as to be of little interest, if all of them were not intended to show the general character of the diagnostic assistance that the roentgenologist rendered the military surgeon in the base hospitals of Constantinople during the Turko-Balkan War."

In view of the tremendous amount of clinical material now being studied by European surgeons, it is to be regretted that such publications as Major Ford's are not more frequent.

Manual of Surgery. By Alexis Thomson, F.R.C.S., Professor of Surgery, University of Edinburgh, and Alexander Miles, F.R.C.S., Surgeon, Edinburgh Royal Infirmary. Fifth Edition. Volume I—General Surgery. Volume II—Regional Surgery. Cloth. Price, $3.50 per volume. New York: Oxford University Press, 1915.

In preparing the fifth edition of this manual, the authors have eliminated all descriptions of operative procedures, which are now included in the third volume. They have also omitted discussions of debatable points, and have included new material on recent advances in pathology and treatment. The Basle anatomic nomenclature has been adopted, but the old terms are given beside the new ones. The discussion of tetanus apparently takes little account of the results of recent studies of the numerous cases occurring in the present war. There is no discussion of blastomycosis, although a small amount of space is devoted to madura foot. In the diagnosis of syphilis no mention is made of the luetin test, but the discussion of treatment is complete. For burns the authors recommend the picric acid treatment as far superior to all others, and warn particularly against the use of moist or greasy applications like Carron oil. In practically all their discussions the authors show acquaintance with American and continental surgical advances and refer repeatedly to the work of well-known surgeons. The two books are excellently and profusely illustrated.

Miscellany

Constitution and By-Laws of the National Board of Medical Examiners for the United States

PREAMBLE

The need of a standard licensing body for the whole of the United States and territories tributary has occasioned the organization of a voluntary board of examiners, selected from the Medical Corps of the Army and Navy and the Public Health Service, with the other members selected from the Federation of State Examining Boards and the medical profession of the United States. That the creation of this board may be certain and its continuance assured, it is proposed that it shall be governed by the following constitution and by-laws as set forth:

CONSTITUTION

I. *Name of Title.*—The name of this body shall be the National Board of Medical Examiners for the United States.

II. *Official Domicile.*—The domicile of this board shall be in Washington, District of Columbia.

III. *Objects.*—The objects of this board are: A. The establishment of a standard of examination and certification of graduates in medicine, through which the recipient may be recognized for the licensure in the practice of medicine in the United States, territories, and extraterritorial possessions on presentation of the proper credentials of this board.

B. A cooperation with the board of medical examiners in individual states, territories and extraterritorial possessions of the United States by which licensure may be effected through registration of the credentials of this board.

C. A consistent high purpose of determining the qualifications of the candidate before this board so as to create his eligibility to the privileges above defined.

D. A democratic administration of the operation of this board in its own executive function as well as in its examinations, which are to be conducted by all modern means to accomplish practical, oral and written tests of the candidates' efficiency and qualification.

E. To hold examinations at the domicile of the board, and at such other locations as may be justified by the number of applicants, their residence, and the facilities for conducting examinations properly.

IV. *Personnel of the Board.*—This board shall initially consist of fifteen members as follows: Admiral William C. Braisted, General William C. Gorgas, General Rupert Blue, Commander Edward R. Stitt, Colonel Louis A. LaGarde, Assistant Surgeon-General William C. Rucker, Dr. Victor C. Vaughan, Dr. Horace W. Arnold, Dr. Austin Flint, Dr. William L. Rodman, Dr. Henry Sewall, Dr. E. Wyllys Andrews, Dr. Louis B. Wilson, Dr. Herbert Harlan and Dr. Isadore Dyer.

Hereafter the board shall comprise the surgeon general of the Medical Corps of the Army and one other representative of the same service to be appointed by the surgeon general, subject to the approval of the board.

The surgeon general of the Medical Corps of the Navy and one other representative of that service to be appointed by the surgeon general, subject to the approval of the board.

The surgeon general of the Public Health Service and one other representative of that service to be appointed by the surgeon general, subject to the approval of the board.

Three members appointed by the Federation of State Medical Examining Boards, subject to the approval of the board.

Six members at large elected by the existent National Board of Medical Examiners.

The terms of service of these members of the board shall be as follows: The surgeons general of the Medical Corps of the Army, the Navy and the Public Health Service shall continue as members of the board so long as they hold their offices as surgeons general. Nothing in this provision shall preclude their reappointment as members of the board.

The other twelve members of the board shall serve for six years each, with the provision that the first board shall be

so constituted that four members shall serve for six years, four members for four years, and four members for two years; these terms of office to be determined by the Executive Committee. The four new members appointed for a term of six years, as provided above, shall be one from the three federal services, one from the Federation of State Examining Boards, and two elected by the existent National Board of Medical Examiners.

There shall be nothing in this regulation which will prevent any one of the four retiring members of the board succeeding himself, if qualified by proper appointment, but no member of the board may serve more than two successive terms.

V. *Organization of the Board.*—(*a*) The officers of the board shall consist of a president, a secretary and a treasurer who, with two members at large, all annually elected by the board, shall constitute the Executive Committee of the board. The secretary need not be a member of the board. In such case he shall not vote.

(*b*) The Duties of the President: The president shall preside at all meetings of the board; he shall direct all business of the board ad interim; he shall be chairman of the Executive Committee; he shall decide all matters of rule and practice not provided for in these regulations and he shall represent, in person or by deputy, the board on all occasions when the board is officially engaged. With the secretary or treasurer he may issue and sign all fiscal documents for the disbursement of funds.

In the event of absence or death of the president, the board shall elect a chairman who shall in all particulars fill the office of president pro tempore.

(*c*) The Duties of the Secretary: The secretary shall have conduct of all of the public relations of the board in conjunction with the president and the Executive Committee. He shall supervise and direct all arrangements for meetings of the board, examinations of candidates for licensure, and he shall fulfil the office of recorder and keeper of records. With the treasurer or president he may issue and sign all fiscal documents for the disbursement of funds. He shall be also secretary of the Executive Committee.

(*d*) Duties of the Treasurer: The treasurer shall be custodian of all funds; he shall deposit all moneys in a national bank in the city of Washington, keeping proper accounts of all receipts and disbursements. With the secretary or president he may issue and sign all fiscal documents for the disbursement of funds. Before each annual meeting of the board, he shall have a proper audit of his accounts by a qualified accountant, who shall make report through the secretary. He shall furnish bond, if the board so order.

(*e*) Duties of the Executive Committee: The Executive Committee in the intervals between board meetings shall transact all business of the board, directing, through the president and secretary, the detail of public announcements and operations as these may relate to the board, its objects, purposes and business. The operation of the Executive Committee shall be made a matter of record for report to the board at its stated meetings with a view to ratification, but without necessity of referendum of such business as may be regular or routine and not affecting the policy of the board.

The Executive Committee shall hold meetings on the call of the chairman, and as often as may be necessary or advisable.

VI. *Meetings.*—The regular annual meeting of the board shall be held at the domicile of the board on ———— in each year. This annual meeting shall be held for the purpose of electing officers, of electing new members, of receiving reports of the several officers, of the Executive Committee, and for the transaction of any other business which may be on the table.

Other meetings may be called by the president on his own initiative, and other meetings shall be called on the demand of a majority of members of the board, provided such members give the president two weeks' notice of said meeting and provided the president thereafter give two weeks' notice before the date of the called meeting.

VII. *Amendments.*—Amendments to this constitution may be made at any regular annual meeting of the board on thirty days' notice in writing, and on a three-fourths vote of the members present.

BY-LAWS

I. *Order of Business:*

(*a*) Roll call.
(*b*) Reading of minutes.
(*c*) Communications.
(*d*) Unfinished business.
(*e*) New business.
(*f*) Recommendation of candidates for licensure.
(*g*) Election of licentiates.
(*h*) Nomination of officers and members and Executive Committee.
(*i*) Election of officers.
(*j*) Adjournment.

II. *Conduct of Meetings.*—(Parliamentary rules as set down in Robert's or Cushing's Manuals.)

III. Dates of examinations for licentiates, regulation of examinations, detail of subjects and their assignment, scope, and time allowance, shall all be determined by the Executive Committee.

IV. Amendments to the by-laws may be made at any regular meeting of the National Board of Medical Examiners by presentation in writing and by a two-thirds vote of the members present.

Narcotic Drugs

M. I. Wilbert, in *Public Health Reports*, says that heretofore the drug trade and the members of the medical profession generally have been indiscriminately accused of fostering and developing the use of habit-forming drugs. This accusation, he believes, has been wholly unwarranted, as is shown by the whole-hearted way in which all branches of the drug trade and all classes of medical practitioners have endeavored to live up to the Harrison Narcotic Law. The active enforcement of the law has already had a wholesome effect in reducing the sale of narcotic drugs. Some of the larger wholesale dealers have reported that their sales have been reduced from 70 to 80 per cent., and retail dealers say that the sales of narcotic drugs and preparations at retail have been materially reduced. A few report an increased volume of business. The report of the Department of Commerce on the quantity of drugs entered for consumption in the United States for the year ending June 30, 1915, indicates that the amount of such material imported has not varied materially. A compilation of the drugs entered from July 1, 1914, to June 30, 1915, shows this, and also shows that during the last quarter of the fiscal year when the Harrison Narcotic Law was in effect the proportion of the amount of these drugs imported was greater than the total amount for the year. This is accounted for on the supposition that a large amount of the drugs imported were intended for reexportation to countries supplied by Germany before the war. Wilbert says that legislatures are beginning to appreciate the fact that the treatment of drug addicts is psychologic and medical, and not a criminal or penologic problem. Laws recently enacted by New York, Pennsylvania, Colorado, Connecticut, Illinois, Hawaii and the Philippine Islands require the general practitioner to keep records covering the use of narcotic drugs. Wilbert says that these efforts of state governments to regulate the use of narcotics should aim to supplement the requirements of the federal law as to the number and kind of drugs proscribed in order to prevent the possible abuse of any drug. Unfortunately, he says, most of the state laws have included clauses similar in effect to Clause 6 of the federal law which permits the use and sale of preparations containing some of the proscribed drugs up to a certain amount. Wilbert says that the use and abuse of narcotic drugs should be made to rest squarely with the members of the medical profession, and that drug dealers should not be allowed any degree of discretion as to their disposition even in limited quantities. He then enumerates some of the additional requirements that might be well included in state antinarcotic legislation.

Medicolegal

Provisions of Medical Practice Act Held Valid

(People vs. Tom J. Chong (Calif.), 151 Pac. R. 553)

The District Court of Appeal of California, First District, affirms a conviction of practicing medicine without a license in violation of the act of 1913 for the regulation of the practice of medicine and surgery. The court says that there was absolutely no merit in the defendant's point that the title of the act under which he was prosecuted was defective. The defendant contended that Section 8 of the act is unconstitutional and void in that it is an unrestricted invasion of the art of osteopathy, chiropractic, and mechanotherapy, in that it prevents practitioners of said systems of the healing art from practicing their profession "without in any manner severing or penetrating any of the tissues of the human being." Assuming, as asserted by the defendant, that members of such schools in practicing, as they do, by manipulation and adjustment, are constantly and continually severing tissues of human beings, and that the practice of their art is impossible without it, still it is very plain from a reading of the whole section that the word "sever," as therein used, means a severance by cutting. Under one form of certificate the holders thereof, as provided in the act, may not only prescribe and use drugs, but may also sever and penetrate with a knife the tissues of human beings. The holders of other certificates are drugless practitioners, and they may not prescribe or use drugs, nor may they operate with a knife or in that way sever or penetrate the tissues of human beings, except that they may sever the umbilical cord. Another point urged was that Sections 9 and 10 of the act are unconstitutional and void, in that the board of examiners are vested with power arbitrarily to determine the fitness of applicants and the standard of colleges as a matter of mere personal discretion or approval, without regard to a standard of academic or scientific proficiency or exactness. This contention is disposed of by what is said in the cases of Ex parte Gerino, 143 Calif. 412, 418, and Ex parte Whitley, 144 Calif. 167, 177. It was proper for the legislature to demand some standard of proficiency, and the court thinks it was equally within its power to declare that such standard shall be the one prescribed by the medical board of examiners. In the Gerino case an applicant under the act of 1907, in order to be entitled to practice medicine, etc., must have graduated from some college or institution approved by the American Medical Association, while, according to the terms of the act under review, he must be a graduate of some college "approved by the board" of medical examiners. The Gerino case and the present one are similar in their facts so far as the point under discussion is concerned, and it must be held on the authority of that case that the contention of the defendant is without merit. It may not be amiss to add that by the terms of the present act, unlike the old act, the applicant must not only have graduated from an approved college, but must also have studied for a certain prescribed length of time and have covered certain enumerated subjects, when, if the college from which he graduated is one of those approved by the board, a certificate to practice medicine, etc., will be issued to him. These provisions are eminently fair, and certainly not unconstitutional.

Liability for Wrong Diagnosis and Treatment

(Just et al. vs. Littlefield (Wash.), 151 Pac. R. 780)

The Supreme Court of Washington affirms a judgment for $500 damages for an alleged wrong diagnosis and ensuing treatment based thereon. The court says that the law is, of course, well settled that a physician is liable for a wrong diagnosis of a case, resulting from a want of skill or care on the part of the physician, and followed by improper treatment, to the injury of the patient but, unless improper treatment follows, a wrong diagnosis gives no right of action. It is now well settled that a physician is entitled to practice his profession, possessing the requisite qualifications, and applying his skill and judgment with due care, and is not ordinarily liable for damages consequent on an honest mistake or an error of judgment in making a diagnosis, in prescribing treatment, or in determining on an operation, where there is reasonable doubt as to the nature of the physical conditions involved, or as to what should have been done in accordance with recognized authority and good current practice. Whether errors of judgment will or will not make a physician liable in a given case depends, not merely on the fact that he may be ordinarily skilful as such, but whether he has treated the case skilfully, or has exercised in its treatment such reasonable skill and diligence as is ordinarily exercised in his profession. There is a fundamental difference in malpractice cases between errors of judgment and negligence in previously collecting data essential to a proper conclusion. If he omits to inform himself as to the facts and circumstances, and injury results therefrom, then he is liable. In the present case, the defendant and another physician positively determined that the patient was afflicted with tumors. Another physician had previously positively determined that she was pregnant, of which diagnosis the defendant was informed, according to the plaintiffs' case. After the defendant's diagnosis, the first physician and another physician consulting with him again examined the patient and determined that she was pregnant, and that she had no tumors, of which diagnosis, according to the plaintiffs' case, the defendant was also informed. His response to this was that "the other doctors were crazy." It might well be conceded that the statements made by the patient to the defendant were deceptive, and calculated to deceive. She did not believe at the time of her examinations by any of the physicians that she was pregnant. The matter of the ethics and propriety of the defendant's conduct in proceeding with the operation without notifying the patient's former attending physician was immaterial. But the matter of the defendant's notice that other competent and reputable physicians had positively declared that the woman was pregnant was serious. Surely it put on the defendant a greater degree of diligence and care to be as certain as circumstances and conditions surrounding the case would admit of. The defendant urged that the incision made was in the nature of an exploratory operation, to determine the true condition of his patient, but he had not the consent of the patient and her husband to make an exploratory operation. Having notice of a directly different diagnosis from his, the patient being a married woman of 37 years living with her husband, not being past her climacteric period, it would seem he should not have hastily flouted the opinion of other reputable physicians that she was pregnant, but might have waited for a time, watching developments, making other examinations, and proceeding with considerable deliberation, unless the presence of tumors becoming more symptomatic, or injurious, rendered the operation therefor more imperative. At all events, whether he proceeded with due and ordinary care in treating the patient was, under the circumstances, a question of fact for the jury.

Power of Foreman to Contract and Receive Notice as to Needed Medical Aid

(Liliopoulos vs. Oregon-Washington Railroad & Navigation Co. (Wash.), 151 Pac. R. 818)

The Supreme Court of Washington affirms a judgment in favor of the plaintiff for damages for failure of the defendant to furnish him hospital treatment, as per its alleged contract with him, after he had been shot in the arm on a day known as Greek Easter, when he and his co-laborers refrained from their ordinary labors. There was a rule of the company to the effect that hospital benefits would not be furnished to an employee for injuries incurred in fights and brawls, and it was contended that the foreman who made the contract of hire with the plaintiff was without authority to contract with reference to benefits to be received in case of sickness or injury different from those set forth in the rules of the company. But the evidence made it clear, the court says, that the foreman was empowered to take men into employ of the company and discharge them after they

had been so employed. Presumptively, at least, he was empowered to state the terms of the contract of hire to those whom he hired, and if he stated them incorrectly, or even contrary to his instruction, any loss caused thereby must fall on the company whose agent he was, not on the person dealing with him as a stranger. Again, it was argued that, since the plaintiff was not engaged in the service of the company on the day of his injury, he was not under the authority of the foreman, and hence notice to the foreman was not notice to the company, and any lack of attention on the part of the foreman would not bind the company. But the court cannot think this contention tenable. The foreman was the representative of the company with whom the contract of hire was made. He had charge of the force of men of whom the plaintiff formed a part. He was the only agent of the company authorized to deal with the plaintiff which the company had brought to the plaintiff's notice. He contracted with the plaintiff on behalf of the company to furnish him with medical and surgical attendance in case he should become sick or be injured during the time he was in the company's employ. Surely it could not be said under these conditions that his power to represent the company with reference to the contract existed only during the periods of the employment in which the plaintiff was actually engaged in manual labor in the course of the employment; on the contrary, his power so to represent the company continued during the entire course of the employment or until such time as the plaintiff should receive notice from the company that the foreman no longer represented it.

Validity of Joint Indictment for Practicing Medicine Without a Certificate

(State vs. McAninch et al. (Ia.), 154 N. W. R. 399)

The Supreme Court of Iowa affirms a judgment of conviction of the defendants of practicing medicine without a certificate. The indictment charged that J. E. McAninch and C. S. McAninch on or about a certain date, and from that date to the finding of the indictment, did wilfully and unlawfully assume the duties of a physician, and make a practice of treating persons afflicted with disease, and did then and there, wilfully and unlawfully, publicly profess to treat, cure, and heal persons afflicted with disease, by a system of treatment called "Chiropractic," without first having obtained from the State Board of Medical Examiners, and recorded in the office of the county recorder, a certificate authorizing the said J. E. McAninch and C. S. McAninch to practice as such, etc. The court, divided four to six, in a lengthy opinion holds the indictment good. It says that a fair analysis of the position of the defendants was that: (1) what they were accused of having done jointly could not be done jointly; therefore it was impossible to prove what was alleged; (2) proof that either did what was charged would not accomplish the proving of any joint act; and (3) where a joint act is charged, and the proof is only that either or all of the defendants did the act severally, there can be no legal conviction of either or all under the joint indictment. But, for one thing, concede, for the sake of argument, that, literally, two men may not be jointly guilty of practicing medicine without first obtaining and recording a certificate required to make the practice lawful. It is still possible that one might aid and abet the other in this violation of law; that defendant B., knowing A. was practicing illegally, did represent, actively, that this was not so, urged patients to come to A., and actually helped him in carrying on the unlegalized practice. Now, since the Iowa statute provides that, for the purposes of indictment and trial, the accomplice is to be dealt with as a principal, this indictment is sustained by very well considered authorities on the theory that even if the proof shows that A. violated the law, and that B. aided and abetted him, an indictment charging both to have violated the law is valid. The court also holds it clear that it was right to overrule that part of the defendants' demurrer which presented that the statutes proceeded under are repugnant to the bill of rights, the constitution of the United States, and the constitution of the state.

Society Proceedings

COMING MEETINGS

American Medico-Psychological Association, New Orleans, April 4-7.
American Urological Association, St. Louis, April 17-19.
Arizona Medical Association, Phoenix, April 26-27.
California State Medical Society, Fresno, April 18-20.
Georgia Medical Association, Columbus, April 19-21.
Louisiana State Medical Society, New Orleans, April 18-20.
Missouri Valley Medical Society, St. Joseph, Mo., March 23-24.
North Carolina State Medical Society, Durham, April 18.
South Carolina Medical Association, Charleston, April 18-20.
Tennessee State Medical Association, Knoxville, April 4-6.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK

Meeting held Jan. 24, 1916

The President, DR. FREDERIC E. SONDERN, in the Chair

Military Preparedness from the Medical Standpoint

DR. E. L. MUNSON, Lieutenant-Colonel, Medical Corps, United States Army: The efficiency of a medical service depends on the work done in advance of actual fighting. An army medical department is not an independent scheme, but is subservient to the general plans of the army; and whether these plans work out to victory or defeat depends largely on the efficiency of the medical corps. The medical officer of the army is not engaged in curing disease but in looking after sanitary conditions in advance of a campaign and in bringing together the various relief agencies so that the sick and wounded can be cared for properly. The sanitary plans form a part of the general plan of a campaign. Every possible precaution must be taken to avoid illness and save life. As soon as tentative sanitary plans have been prepared, they must be submitted to the officer having charge of the tactical plans. The medical officer consults all available statistics with reference to the health of the locality in question and the incidence of transmissible diseases. Attention is given to clothing, climate, and a study of the race living in the locality under consideration. All the climatic conditions, temperature, humidity, rainfall and seasonal influences are taken into consideration in the medical plan for the campaign. Based on these, all the sanitary details for the military community are worked out. Estimates are made showing how many men might be counted on as in fighting condition, and what provision might have to be made for reinforcements to make up for those not ready for duty. Arrangements have also to be perfected for caring for the wounded near the line of battle and for transportation facilities for removing the wounded to base hospitals. The medical man must also be informed of the means of transportation in the vicinity that can be depended on and of all existing hospitals, and also with reference to all lines of transportation carrying the men home and their medical equipment. A study must be made of the requirements in the way of drugs and dressings and of the amount that probably would be needed. All these things should be done in advance of actual hostilities, and should be adequate to meet all exigencies.

DR. KARL CONNELL: Modern war is not merely the clash of the sword at the battle front; it is an intense economic struggle which involves every phase of natural activity. Those of us who have seen the present European war at close range were profoundly impressed with the complex organization which kept the soldier on the firing line itself. A vital unit of this organization behind the soldier is the sanitary department. I had the opportunity last winter to observe certain phases of the surgical and sanitary organization in France, Germany and Austria-Hungary, and I was deeply impressed with what martial efficiency meant, by the slow preliminary preparation necessary for efficiency, by the intensive organization, the mental and physical preparedness in time of peace which alone makes for success in time of war. As against infection by disease, so against war, preparedness is the one vital lesson they bring home. It becomes a duty to impress on you the medical needs in war and sow

the seed that will bring this country to physical, social and military fitness. Our own wars have been sanitary disasters. Although the medical corps of our regular army is highly efficient, yet it is scarcely half the strength required for our small army on a peace basis. Our future depends on the training by a small professional army of the larger army of citizen soldiery, men trained as in Europe, alike a national asset in peace and in war. Correlated with this they must become medically efficient by organizing their civilian surgeons. The professional military surgeons do not do the surgery of the war. They are primarily officers of sanitary administration. Their duty is to keep the health of the troops, get supplies and rid the fighting zone of the sick and wounded. The actual surgery of war must be done by the civilian surgeons working in the base hospitals. From the German West front, men with head wounds are gathered in Cologne under Professor Preysing. The mandible cases are concentrated at Düsseldorf under Professor Bruhn. In this clinic reconstructive surgery after the terrible face injuries reached its highest development under a surgeon already trained in the accident service of the Essen Iron Works. In retrospection of all the marvels of intricate organization, the most impressive feature is the economic result. The acute cases are less severe by virtue of prompt treatment. The chronic cases do not back up, like logs in a jam, to be cleared out after the war; each case moves smoothly to its final cure with the system and precision of peace. It is the economic, humanitarian, impersonal triumph of organization. The medical corps of our regular army is numerically entirely inadequate and should be strengthened. No efficient organization exists for the civilian surgeon. The reserve medical corps is loose, disjointed and uncontrolled.

DR. S. H. WADHAMS, Major, Medical Corps, United States Army: It is evident that the present medical organization of the army, which is scarcely adequate for times of peace, would impose a tremendous burden on the civil profession in the event of war. The result of medical unpreparedness has been amply demonstrated in the past, and unless we learn the lessons of former wars, the same inefficient provision for protecting the lives and health of the men from the onslaughts of disease would result in untold suffering, loss of life and increase in the pension roll in the future. The medical resources in case of war are about 444 medical officers in the United States Army, about 850 in the National Guard, and about 1,500 in the National Reserve Corps. To be thoroughly efficient, the medical man must have special training as a medical officer. This being true, it is evident that the act of April 23, 1908, which provided that members of the Medical Reserve Corps should give their services only in times of emergency war, is wofully inadequate. As to the number of medical officers that are required, if the army should number 2,000,000, it would have only 20,000 medical officers, or 1 per cent., which is not enough. It must be remembered that in time of war there must be medical officers at the front, in the lines of communication to the base hospitals, in the base hospitals and from the base hospital to the home territory. For duty at the front a man must be a trained organizer and a sanitarian; none of his duties there require a high order of medical or surgical skill, but do require administrative ability. The experience of the Spanish-American War should teach the necessity of medical preparedness, and that we cannot depend on a voluntary service that can be accepted or rejected at will. We must be prepared before the emergency arises.

DR. WILLIAM S. TERRIBERRY: There are three schemes of organization which are now prominently before the public: (1) the scheme proposed by the staff of the army; (2) the so-called continental army organization, and (3) the federalization of the organized militia. The general staff proposes a greatly increased regular army, a short time of enlistment, and a reserve. It provides for a continuation of the soldier's training in a reserve during a period of years and finally enrolment in a reserve without further training. This plan perpetuates a system of highly trained, mercenary professional armies, a military organization hopelessly out of date. Mobilization of the regular army for war would necessitate an infusion of 60 per cent. of green men and probably 40 per cent. of untrained officers, and this would mean that the present army could not take the field for at least three months after mobilization. The plan for a peace time volunteer army provides for the enrolment of a force of 400,000 men in annual quotas of 133,000. The force is to be raised by authority of Congress and is to be under the direct orders of the president both in peace and in war. It is to be trained, armed, equipped and paid by the federal government, and is not to be assembled except for short periods each year. The continental army plan leaves all important objects unattainable. The national guard system is worth perpetuating and developing on condition that it can be standardized to a common high level, and that it can be made available for use at any time, for any purpose and as long as needed. Of all plans for military preparedness, the regulation of the organized militia offers the best prospect of development into a national army of the twentieth century model. Whatever the form of organization, it is not too much to say that the success or failure of future war depends on the care that is given to the organization by the medical department. The smallest proportion of medical officers that would be needed for service with troops actually in the field is 1 per cent., and these men would have to be medical officers and not civilian doctors improvised into officers. To train these men takes years of instruction and practice. The best organization seems to be a civilian base hospital unit, complete with consultants, operating surgeons, assistant surgeons, specialists, laboratory men and a nursing force. This unit should be organized and its personnel kept up during peace to a full war strength. For the members of this unit, military instruction is necessary. No adequate method of national defense will arise from the present agitation. The nation has never been actually tested in war, and it will take a real war with an overwhelming defeat to convince us that a national army based on universal service in time of peace is our only safety.

DR. EDMUND P. FOWLER: The regimental officer is responsible for the sanitary condition of the regiment. A regular monthly examination is made of every soldier and the records kept. The sanitary detachment is responsible for the sanitary operation of the kitchen, the care of urinals, the collection and disposal of waste, and for the public washing and bathing places. The regimental sanitary detachment accompanies the troops to the front in time of battle and establishes first aid stations near the firing line. The medical officer must be not only a trained doctor but also a trained soldier, and the two ways to train men for this duty are either in the national guard with the troops or with the reserves. Conditions abroad have shown the results of medical unpreparedness, and if in the future we are to avoid such results, training in the medical service required to meet the demands of war must be universal.

DISCUSSION

DR. HENRY C. COE: In 1908, when Congress provided for a general medical reserve corps, such a corps was regarded as a joke and remained so for a long time. Recently there has been a changed condition of affairs in the corps. Five or six years ago I went to Gettysburg with the troops to learn what I could with reference to the possibilities for usefulness of the medical reserve corps. I then made up my mind to try to galvanize this dead body into life, and the effort has been attended with great success in this state. The medical reserve corps in New York state numbers 230 today. We want young active men, men who are patriotic and ready to serve their country. The medical man should be under the same necessity of giving his services to the state as of giving his services to humanity.

DR. S. J. MELTZER: Our hospitals and universities can be used; such units sent abroad give better service than the foreign countries have been able to provide. I cannot agree with the statement regarding the question of preparedness of the Army Medical Corps; it is astonishing what they have accomplished in the last sixteen or eighteen years. We learned the cost of not having an efficient medical service in the Spanish-American War and that very able Surgeon-General, Dr. George M. Sternberg, has laid the foundation

for an efficient army medical corps in the Philippines and in Cuba, which has accomplished a great deal in many trying circumstances. Dr. Sternberg has demonstrated that a medical man can be patriotic and will give his utmost service to his country, and this service is at the same time not in contradiction to his service to humanity.

DR. EMIL HUEL: When the state accepts the services of a soldier, it gives him a uniform and a certain financial compensation, while the man in the Medical Reserve Corps has to furnish his own equipment, and give a great deal of time to preparation for the service, for which he receives nothing, except at such a time as he might be in active service, and then he is allowed $5 a day. The federal government should recognize the burden that preparation for military service imposes on the civil practitioner and should give him fair treatment.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES

Twenty-Sixth Annual Meeting, held in Chicago, Feb. 8, 1916

The President, DR. CHARLES R. BARDEEN, in the Chair

Resolutions

The association approved of the purposes of the National Board of Medical Examiners, and recommended that its objects be encouraged.

The Executive Council recommended that after Jan. 1, 1918, the standard for admission to medical colleges be increased from thirty to sixty hours of college credit, with the present specific requirements as a basis. This recommendation will be acted on at the next annual meeting as an amendment to the constitution.

Function of the Dispensary

DR. GEORGE BLUMER, New Haven, Conn.: The dispensary should be a center for the dissemination among the public of the knowledge of preventive medicine. The presence of the medical student stimulates the attending physicians to a better type of work. Adequately equipped dispensaries should be a source of material for research. The dispensary offers greater opportunities for the study of minor ailments and incipient chronic disease than does the hospital. It is a mistaken assumption that medical fledglings are capable of adequately caring for this important work. Trained supervision of the dispensary work is important. An insufficient social service department or absence of one is frequently noted. The unit arrangement is the best. There should be a central waiting room, surrounded by suites of examining or dressing rooms. Each clinic should control a working unit, and each unit should consist of a central admitting room, which connects directly with the general waiting room, flanked on either side by a series of unit rooms, modified according to the need of the particular clinic. In the central admitting room of each unit the current records are kept, and the room is divided into a series of cubicles in which the histories of the patients are taken. A superintendent, not necessarily a physician, should be in charge of the dispensary, and he should have training in the social side of dispensary work. He should devote his entire time to the work. There should be a sufficient force of clerks and nurses. The dispensary staff may be divided into the teaching staff and the service staff, the latter taking care of the routine work of the dispensary. At Yale we find it necessary to have at least one paid man in each department. Records should be carefully and properly kept. The dispensary is a natural feeder of the hospital. The equipment should be such that thorough examination and treatment of all patients is possible, including apparatus and a clinical laboratory, Roentgen department, physical therapy department, cystoscopic rooms, etc. There should be at least one instructor to a group of five students. Where the clinical clerk system is in operation, third year students may devote their time in the dispensary to general clinics, and the fourth year students to the specialties. Specialization should be encouraged in the separate clinics. The third year students should be taught how to take histories and how to handle patients in a tactful and humane manner; how to make a thorough routine physical examination, and do the necessary clinical laboratory work, and should receive instruction in the use of diagnostic apparatus and instruments. The class method of instruction is a great advantage. A properly equipped and adequately manned dispensary is one of the most important factors in clinical instruction.

Aims, Methods and Results in Medical Education

DR. CHARLES R. BARDEEN, Madison, Wis.: The results of the joint product of educational plants, teachers and students are to be determined by the scientific output and by the ability of the graduates to perform the services for which they are trained. Methods should be designed to furnish the requisite training as directly, simply and inexpensively as possible compatible with adequate results. We need more organization and cooperation of men in different lines of work. Hospitals should be looked to more and more as natural centers, where the specialized activities of groups of physicians may be brought into harmonious cooperation. A greatly reduced number of physicians can serve the needs of the people effectively only through cooperation. There is also a need of a financial reorganization in medical economics. The public should pay for the public services which physicians perform, the same as lawyers are paid. The expense connected with the early years after graduation, as well as the cost in time and money of the long training now demanded of medical students, makes it imperative that we should seek to lessen the cost to the student in every way compatible with efficient training, because otherwise we shall encourage him subsequently to become commercialized. With the profession confined to a few high priced practitioners, there will be danger of increased quackery for the mass of the people. If we try to reduce expense by educating large numbers in relatively few medical centers, effective results will not be obtained, because intimate association between teacher and pupil is necessary.

Teaching of Applied Therapeutics

DR. FRANCIS H. MCCRUDDEN, Boston: The teaching of therapeutics is one of the weakest points in the training of the medical student. The weakness lies in the fact that no systematic instruction is usually given in the general principles of therapeutics. In the course in clinical medicine, the attention of the student is directed chiefly to symptomatology and diagnosis; treatment is relegated to a subordinate position. The treatment of sick patients can be learned only by the inductive experimental method of long continued bedside observation of many patients. We treat individuals rather than diseases. Pharmacology, though generally considered the science at the basis of treatment, is not, for it deals with only part of the fundamentals of therapeutics. It deals with the activities not only of useful drugs, but also of drugs which are not useful. A knowledge of pathology and clinical medicine is a necessary prerequisite to the study of therapeutics, but is not necessary for the pharmacologist. Drugs have a different effect in pathologic conditions from what they have in health. A knowledge of pharmacology alone is not a sufficient basis for the treatment of patients. Therapeutics should be taught as an applied science, and not as an empiric art. It should be the most important course in the curriculum. Improvement in functional efficiency is the ultimate purpose of all therapeutics. All methods of treatment may be grouped under three headings: (1) preventive treatment; (2) direct treatment of the disease or its causes; (3) indirect treatment directed at the functions of various organs. Therapeutics is really a branch of applied physiology, and should be taught as such. I teach therapeutics in a large, modern hospital, of about 150 beds, well equipped for study, diagnosis and treatment. A definite plan of teaching is outlined, considering in order the treatment of various diseases of each organ. We begin with diseases of the heart, and then in order consider the kidneys, vessels, lungs, blood, gastro-intestinal tract and diseases of metabolism. The functions of each organ are reviewed, and then the nature of the disturbance of function, to which pathologic changes may lead, methods of influencing these disturbances

of function, and, finally, the clinical forms of disease of the organ. Instruction is given to small sections of students during the fourth year at the bedside. Emphasis is laid throughout on the general principles of treatment.

Teaching of Clinical Medicine

DR. LEWELLYS F. BARKER, Baltimore: The goal of clinical medicine is to understand the abnormal conditions which may occur in the human organism, in order that physicians may act in a rational way to cure or prevent them. The science of clinical medicine may be divided into two parts: (1) that dealing with the understanding of exactly what is going on in the body and mind of the patient and how it has come to pass—the science of diagnosis, and (2) that dealing with the fitting action to be taken to prevent the origin or extension of abnormal processes, and, when possible, to restore bodies and minds deviating from normal function to a healthy state—the science of prophylaxis and therapy. Students must be instructed as well as educated. Students now enter on the study of clinical medicine knowing what the scientific method of inquiry is. They are acquainted with libraries, and know how to use them. They know that disease is a modification of structure and function beyond certain limits, known as health. The department of clinical medicine should control (1) a medical clinic; (2) a medical dispensary; (3) a large clinical institute containing (*a*) a clinical amphitheater; (*b*) a general clinical laboratory; (*c*) a series of smaller laboratories; (*d*) other laboratories for advanced investigative work; (*e*) a "heart station"; (*f*) a roentgenologic laboratory, and (*g*) many small rooms for special examinations with instruments of precision, for the staff, for advanced students, for an artist, and others.

The first year of clinical work should consist almost entirely of a systematic education in the methods of clinical examination of the normal and the diseased human being. This comprises instruction in history taking, physical diagnosis and clinical laboratory work. Every student should become acquainted with Roentgen apparatus and the technic of roentgenoscopy and roentgenography. He should learn the clinical application of bacteriologic methods, and of the doctrines and technic of immunology. All methods of diagnosis and aids in diagnosis should be taught by actual observation. Special methods of study in palpation, digital exploration and laboratory investigation should receive attention. All patients entering a general hospital, except those of surgical emergency, should first be sent to the medical clinic for thorough diagnostic study before they are sent to special clinics. The teaching of neurologic and psychologic methods of examination should occupy enough time to enable the students to acquire competence in at least the main procedures of clinical medical inquiry. Instruction should include finally the procedures used for the clinical study of metabolism, and especially the disturbances of function of the endocrine glands. The students may enter the wards for a period of three months of concentrated clinical study, spending practically the whole day in the hospital, laboratories and libraries. Three or four beds may be assigned to each student, and the patients assigned to these beds are his for study and investigation. The student accompanies the patient to the special examining room and assists with the technic of special methods of examination. This will train him in accurate observation. The student follows the case closely during the stay of the patient in the hospital. Should death occur, the student assists at the necropsy, and makes histologic and bacteriologic examinations. During the first year of clinical work the student should study carefully a textbook of clinical methods of investigation. During his second year he should study a good textbook of medical practice.

Teaching of Clinical Surgery

DR. A. C. STOKES, Omaha: The dispensary should be thoroughly organized and supervised by the heads of departments. Of thirty medical schools in Class A, only about four have a properly organized dispensary. In some schools, dispensary service does not seem to be compulsory. In all but two the instructors are of the lower grades. In only one college was there an equivalent evaluation of the dispensary service in terms of hours. Instruction given in dispensary clinics is without common purpose or classification as to scope and function. Good instruction is being given in many dispensaries, but it is accidental rather than the result of a properly directed system. In many colleges the dispensary does not seem to be connected with the hospital. The students do not see the end of the case. The importance of clinical clerkships cannot be emphasized sufficiently. The instructor should make each case an elementary problem in clinical research. Ward walks in sections of five or ten students comprise the single step which divides this work from the amphitheater clinic. A keen clinical teacher may do a great deal in ward walks in developing the observation of the student. The large operative amphitheater clinic is rapidly disappearing. The amphitheater diagnostic clinic conducted by a real teacher has much value. Didactic courses should be combined with laboratory and clinical courses.

Municipal Hospital as a Factor in Clinical Teaching

DR. HANAU W. LOEB, St. Louis: The St. Louis City Hospital is under the control of a hospital board, a hospital commissioner, a staff of physicians and a superintendent. The hospital is divided as equally as possible into three units, the appointments for each unit being made without reserve, in two instances by medical colleges of the city of St. Louis, and in the third instance by the hospital commissioner, no instructor in either university being eligible to this unit. In each of these units there is a complete organization in each department, but the organization is much more efficient in the university units than in the outside unit. The immediate policy of the staff is under the charge of an executive committee composed of two representatives from each unit. This whole plan is dependent on the will of the hospital commissioner and the director of public welfare. The same plan can be adopted anywhere, provided the medical colleges of the highest class work together to the end that public charges in municipal hospitals shall be under the direction of the staff that is appointed on the basis of a definite policy, which comprehends only the highest ideals of medicine. Speaking for my own school, I would say that three of our attending physicians and three of the attending surgeons are paid sufficient salary to justify them to give the time which the service and instruction require. In addition, there are two men in each department who are not paid. No provision has been made for compensation in the specialties. Thus our institution is provided with 350 beds in the municipal hospital entirely under our charge, with paid instructors, a definite assignment of wards under our own members of the resident staff, and with authority to train our students according to the opportunities present.

DISCUSSION ON PAPERS OF DRS. M'CRUDDEN, BARKER, STOKES AND LOEB

DR. FRANK BILLINGS, Chicago: Every teacher of medicine must agree with Dr. Barker's plan, although it carries with it an enormous expenditure for apparatus, rooms, etc. It also implies an enormous amount of time to the student, as compared with the remainder of the curriculum. In fact, Dr. Barker and Dr. Stokes would demand more time for the departments of medicine and surgery than is allotted to all departments in the model curriculum. We have for years separated the departments of teaching too much. We divide our curriculum into too many parts. We repeat a great deal in teaching clinical medicine. If I were going to build up a clinical department and could have a hospital of a certain number of beds suitable for the number of students to be taught, I would recognize four main departments: (1) pathology (2) general medicine with all its specialties; (3) surgery with all its specialties, and (4) obstetrics. Pathology would be the main department of the whole organization. This clinical school would have wards, one of these would be an obstetric ward. It would have emergency wards for medicine and surgery and for the specialties in these fields. The remainder of all patients would go into observation

wards. No patient would enter a special ward for treatment until his case was diagnosed. Then the patient would receive treatment. Surgical or medical diseases do not exist, nor does surgical diagnosis differ from medical diagnosis. A teaching institution must command its hospital absolutely. All hospitals should be utilized for teaching. We must educate the people to see it that way. I want to emphasize one point: We are cramming our students too much and doing it because we do not coordinate enough in the different departments. We ought to recognize disease as disease without an adjective.

DR. ARTHUR DEAN BEVAN, Chicago: In teaching medicine and surgery we must first decide on what we are going to accomplish. In undergraduate teaching we must be satisfied with a method to turn out general practitioners of medicine. To prepare a man to be a specialist means additional years of preparation after his course in undergraduate work. Our curriculum is overcrowded, and Dr. Billings' suggestions appeal to me. In teaching surgery I am very much in favor of carrying pathology in the surgical course. This precludes a previous training in pathology and bacteriology. Anatomy should not be dropped at the end of the sophomore year. It is essential to surgery in diagnosis as well as in treatment. The same applies to bacteriology, embryology and physiology. Certain relationships between these subjects should be recognized. The backbone of a clinical course should be the general clinic. I do not favor the elimination of the big teaching clinic from a clinical course. I mean a teaching clinic. The old fashioned operative clinic is a failure, but the teaching clinic is not. Certain laboratory courses should be carried on as a special part of the surgical course. A sharp dividing line must be made between preparing a man to go out and practice medicine and preparing a man to go out and be a surgical specialist.

DR. W. T. COUNCILMAN, Boston: It is of fundamental importance to teach pathology in connection with clinical work. Our students should come to us better prepared, and with a greater capacity of acquiring knowledge. We need men who have had training in the methods of acquiring knowledge, and when we get these we shall get better results from our teaching.

DR. FRANCIS S. MCCRUDDEN, Boston: The Robert Brigham Hospital of Boston is the first hospital in which the physiologic point of view regarding the purpose and principles of treating chronic disease has served to guide, direct, stimulate and illuminate all the activities and problems of the hospital. What I tried to bring out in my paper was that the treatment of patients was not alone one of applied physiology, but also one of applied sociology. It is not alone a question of pharmacology. The patient should be under the supervision of one individual, and not under the independent care of a number of specialists.

DR. LEWELLYS F. BARKER, Baltimore: Diagnosis, after all, is the important thing. Some one must be responsible. Whoever it is, he must be the broadest possible sort of a man, a man big enough to call to his aid everybody who could throw light on the case. Then the patient should be turned over to the proper department for treatment. The time element is an important one, but if we can teach a student how to investigate a case thoroughly, he can safely go out as a general practitioner. We cannot make him a surgeon or an ophthalmologist, but we can make him a good general practitioner.

DR. A. C. STOKES, Omaha: I agree with Dr. Barker that all patients coming to the hospital should go through the medical department. I cannot see any difference between pathology andd clinical pathology. My endeavor has been to correlate subjects in such a way as to reduce to a minimum the number of assigned hours.

DR. HANAU W. LOEB, St. Louis: My plea is entirely for a propaganda for the universities to have their share, as universities, in the municipal hospitals, and also that the outside physicians should have their share. Letting the people know the tremendous advantage which would accrue to the hospital by such a policy would lessen, if not remove, the difficulty of putting it into force.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Internal Medicine, Chicago

February, XVII, No. 2, pp. 181-342

1 *Nonparasitic Chyluria. K. I. Sanes and M. Kahn, Pittsburgh.
2 *Experimental Alcoholic Cirrhosis of Liver. A. L. Grover, Iowa City, Iowa.
3 *Blood and Blood Vessels in Hemophilia and Other Hemorrhagic Diseases. A. F. Hess, New York.
4 *Eventration of Diaphragm: Case of Right-Sided Eventration. S. Bayne-Jones, Baltimore.
5 *Study of Lipin Content of Case of Gaucher's Disease in an Infant. H. R. Wahl and M. L. Richardson, Cleveland.
6 Control of Experimental Cretinism. H. R. Basinger, Chicago.
7 *Agglutination in Pertussis, Its Characteristics and Its Comparative Value in Clinical Diagnosis and in Determination of Genus and Species. O. R. Povitzky and E. Worth, New York.
8 Permanganate Reduction Index of Cerebrospinal Fluid. W. O. Hoffman and A. B. Schwartz, Chicago.
9 *Treatment of Typhoid by Intravenous Injections of Polyvalent Sensitized Typhoid Vaccine Sediment. F. P. Gay, Berkeley, Calif., and H. T. Chickering, New York.
10 Interpretation of Positive Nitrogen Balance in Nephritis. H. O. Mosenthal, Baltimore, and A. E. Richards, Philadelphia.

1. **Nonparasitic Chyluria.**—It appears that the chyluria in the case examined by Sanes and Kahn was due to a passage of fat from the blood directly into the urine through the kidney epithelium, caused, probably, by a functional disturbance of the kidney cells.

2. **Alcoholic Cirrhosis of Liver.**—Grover claims that it has been pretty well proved that a cirrhosis can be obtained from alcohol in cases in which no other factor is apparent.

3. **Blood and Blood Vessels in Hemophilia.**—The main points in Hess' article may be summarized as follows: The coagulation time of the plasma in hemophilia at times may become normal without the occurrence of hemorrhage or other apparent change in the condition of the patient. The estimation of the number of blood platelets is of great value, as has been found by others, in differentiating between purpura and hemophilia. In some cases of purpura, the platelets are abnormal and may be differentiated, like other macrocytes and microcytes of the blood, into macroplatelets and microplatelets. The puncture test—the reaction following subcutaneous puncture of the skin—is an aid to diagnosis. In hemophilia a hemorrhagic area rarely results from this procedure; in purpura it is the rule. The capillary resistance test is also of value. By this is understood the reaction following the application for a definite period of a tourniquet to the upper arm. In purpura, this results in petechial hemorrhages on the forearm; in hemophilia the effect is negative. There is an hereditary purpura as well as hereditary hemophilia. This type of purpura should be more generally recognized, so that these cases will not, on account of their hereditary history, continue to be regarded as hemophilia. The male member of a family may be a bleeder of the hemophiliac type and the female of the purpuric type. Two families are described by Hess in which one member suffered from hemophilia and another from purpura.

Hemophilia may be atypical. A case is reported which showed a calcium deficiency, as borne out by various chemical and clinical tests (hemophilia calcipriva). In some cases manifesting hemorrhage, by vessels seem to be involved. This weakness is encountered in children and may be congenital; it may appear in the course of an infectious disease, or of a nutritional disorder, such as infantile scurvy. In the classical case the differentiation between hemophilia and purpura is simple. The picture of a typical hemophiliac is a male, with a hereditary history of bleeding, whose blood manifests a definite delay in coagulation time, whose platelets are normal in number, "bleeding-time" not increased, who shows no hemorrhagic reaction following subcutaneous puncture of the skin, and a negative capillary resistance test. A typical case of purpura is found to be quite different: the almost normal time and the number of blood platelets is decreased (frequently below 100,000 in number), there is

definite subcutaneous hemorrhage following puncture of the skin, an increase of the bleeding time, and the development of a large number of petechial hemorrhages following the application of a tourniquet.

4. **Eventration of Diaphragm.**—Bayne-Jones reports a case of eventration of the right side of the diaphragm. He claims that this diagnosis, made from physical examination, is the first of its kind determined during the life of the patient. The clinical impression was confirmed at an operation. Tabulation is made of forty-five cases of eventration of the diaphragm. Of these, three were right-sided, while forty-two were left-sided lesions. In the differential diagnosis between eventration and allied states, the difficulties are pointed out, particularly with regard to the differentiation from hernia of the diaphragm. No single method is capable of establishing this differentiation, but all together render the diagnosis reasonably certain. The various etiologic hypotheses are summarized, showing that the weight of evidence is in favor of the opinion that the disease has a congenital origin.

5. **Gaucher's Disease in an Infant.**—Wahl and Richardson state that in Gaucher's disease the liver and the spleen show not only a marked increase in the lipin content, but also a serious alteration in normal relations of the lipins to each other. The fixed fats are greatly reduced, while the lipoids, such as lecithin and cholesterol, are greatly increased. In the author's case a lecithin-like body predominated, but a cholesterin compound may prevail in other cases. In Gaucher's disease, lipoid substances accumulate in the form of small droplets within the cytoplasm of the tissue cells, resulting in the formation and accumulation of the distinctive large pale cells so characteristic, histologically, of this disease. Gaucher's disease is due to a disturbance of lipoid and fat metabolism, resulting in the accumulation of lipoid substances in the cytoplasm of the large pale cells that are mostly transformed reticulo-endothelial cells of the spleen, lymph nodes and bone marrow and the stellate cells of the liver. These cells have the physiologic property of disposing of the fats and lipoids, and comprise the "endothelial Stoffwechselapparate." It is thus a system disease, but involves the hematopoietic organs only secondarily in that they are very rich in the reticulo-endothelial cells. Those organs that contain the reticulo-endothelial cells in large abundance (spleen, lymph glands, bone marrow, liver, stellate cells of Kupfer, etc.) show the most changes; but specific parenchymal cells may absorb some of the lipoid in a very advanced case. Gaucher's disease belongs to the group of xanthelasmic conditions which are characterized by a more or less diffuse accumulation of lipoids in reticulo-endothelial or in fibroblastic cells in one or more organs. It represents a more diffuse and widespread involvement of the "endothelial Stoffwechselapparate" than those cases of "grosszellige Hyperplasie der Milz" in diabetic lipoidemia, with an underlying cause that is more deepseated and inherent in the body economy.

7. **Agglutination in Pertussis.**—A strongly agglutinating pertussis serum was best obtained by the authors in the rabbit by ten to twelve intraperitoneal inoculations of living cultures given at seven-day intervals. Over 95 per cent. of rabbits, inoculated in this manner, produced agglutinins, though not in equal abundance. Agglutinins are also produced by vaccines, but not as abundantly as by living cultures. Those rabbits which received eight to nine inoculations of vaccine and did not show agglutinins to any large extent, were, nevertheless, markedly immune. A high titer serum (from 1:4,000 to 1:10,000) always proved to be a quickly acting serum which reacted in from one to one and one-half hours in the incubator at 37 C., sometimes up to 1:8,000, with well agglutinable pertussis strains. A low titer serum was usually slow in reaction and did not show agglutination till after remaining in the ice-box over night. By agglutination tests, *B. pertussis* strains can be specifically identified from hemoglobinophilic bacilli, pertussis-like bacilli, and *B. bronchisepticus*. In no instance was there cross agglutination between these organisms—at least not higher than 1:40. For identification a strong serum of high titer should be used. Thirty-three per cent. of adult nonpertussis serums show agglutination in up to 1:40; 17 per cent. in up to 100; 40 per cent. of children's nonpertussis serums (scarlet fever cases) showed a reaction in up to 1:40. A dilution of not less than 1:200 is necessary for a practically positive diagnosis of pertussis by agglutination test.

9. **Typhoid Treated by Injections of Polyvalent Sensitized Typhoid Vaccine Sediment.**—This article deals with the study of 105 cases of suspected typhoid. In sixty-five of the 105 cases the diagnosis of typhoid was made from both clinical and laboratory data. In these sixty-five cases the Widal was positive in sixty (93.7 per cent.) and as early as the fifth day, the high percentage of results being due, in a large measure, to the method employed, namely, the use of the macroscopic method and a formaldehydized culture of the typhoid bacillus. Of the blood cultures taken in fifty-eight cases there were forty positive (70 per cent.), including a case first seen on the thirty-second day. In only one case of the sixty-five were both Widal and blood culture negative, which case was diagnosed by the presence of *B. typhosus* in the stools. The method of treatment employed by Gay and Chickering consisted in the intravenous injection of 1/50 to 1/25 milligram (150 to 300 million bacteria) of a sensitized, polyvalent, killed typhoid vaccine sediment prepared after the method of Gay and Claypole. In 66 per cent. of the cases a distinct benefit was obtained; in 41.5 per cent. of this 66 per cent. the recovery was of an abortive form with a critical fall of temperature and a permanent normal temperature established within a few days. This permanent normal temperature was reached on an average seven days after beginning treatment in these cases. A series of subcutaneous injections following the intravenous treatment apparently aids in preventing relapses.

Boston Medical and Surgical Journal

February 17, CLXXIV, No. 7, pp. 223-258

11 *Skin Reactions Excited by Various Bacterial Proteids in Certain Vasomotor Disturbances of Upper Air Passages. J. L. Goodale, Boston.
12 Gunshot Fracture of Long Bones. C. C. Simmons, Boston.
13 Abnormalities of Heart in Infectious Diseases. C. S. Chapin, Great Barrington.
14 Heart in Pregnancy. E. H. Taylor, Pittsfield.
15 Heart Disease in Pregnancy and Labor. J. L. Huntington, Boston.

11. **Vasomotor Disturbances of Upper Air Passages.**—During the past two years 340 cases exhibiting vasomotor disturbances of the upper air passages have been examined by Goodale with reference to the possibility of eliciting a skin reaction by the application of various proteins to an abrasion or scratch of the skin. The results of these studies have shown that from a clinical standpoint such conditions may be divided into two main groups, the seasonal and the perennial. The seasonal group includes hay-fever and hay asthma, in cases in which the exciting protein is represented by the pollen of different species of plants, the occurrence of the symptoms being synchronous with the flowering of the plant in question. The perennial forms of vasomotor disturbance occur at any time of the year. Goodale calls attention to the probable existence of a third group of vasomotor disturbances, which may be termed infectious, in that their appearance seems to stand in relation to bacterial invasion of the upper air passages. In certain anaphylactic individuals exhibiting symptoms of perennial vasomotor disturbances of the upper air passages, an immediate and characteristic reaction is elicited by the application to a scratch of the skin of soluble extracts of *Staphylococcus pyogenes albus, aureus, citreus* and *Micrococcus tetragenus;* also by an as yet unidentified bacillus having some of the characters of Friedländer's bacillus. Such individuals are not sensitized equally to these organisms, some patients reacting to one and some to another of the bacteria in question.

California State Journal of Medicine, San Francisco

January, XIV, No. 1, pp. 1-42

16 Laryngeal Diphtheria. W. W. Behlow, Boston.
17 Local Anesthetics. G. MacGowan, Los Angeles.
18 Clinical Records. E. S. Kilgore, San Francisco.
19 Perinephritic Abscesses. W. F. Braasch, Rochester, Minn.
20 Need of Psychopathic Hospitals in Large Cities. H. W. Wright, San Francisco.
21 Are We Making Progress in Early Recognition of Tuberculosis? G. H. Evans, San Francisco.

22 Review of Recent Progress in Roentgenology. W. W. Boardman, San Francisco.
23 Mastoid Operation Dependent on Pathology. C. F. Welty, San Francisco.
24 Origin and Ending of Dr. Jordan Museum of Anatomy, etc. J. F. Gibbon, San Francisco.

Colorado Medicine, Denver

February, XIII, No. 2, pp. 35-68

25 Etiology, Pathology and Therapy of Hodgkin's Disease and Allied Affections. J. L. Yates, Milwaukee, Wis.
26 Experiences in Serbia. W. A. Jolley, Boulder.
27 Case of Pelvic Cellulitis, or Phlegmon Ligneux of Pelvis. W. A. Jayne, Denver.
28 Interparoxysmal Vasomotor Crises of Migraine. E. W. Lazell, Denver.

Iowa State Medical Society Journal, Des Moines

February, VI, No. 2, pp. 41-98

29 Roentgen Observations Respecting Cause and Treatment of Constipation. J. T. Case, Battle Creek.
30 Report of Ruptured Uterus in Country Practice. A. J. Swezey, Decorah.
31 Diabetes Mellitus. S. K. Davis, Libertyville.
32 Extrinsic Muscles in Refraction. H. M. Ivins, Cedar Rapids.
33 Induced Abortion. C. E. Dakin, Mason City.
34 Gangrene of Appendix. M. Emmert, Des Moines.

Journal of Biological Chemistry, Baltimore

February, XXIV, No. 2, pp. 91-172

35 Mode of Action of Oxidases. H. H. Bunzell, Washington, D. C.
36 Relative Oxidase Activity of Different Organs of Same Plant. H. H. Bunzell, Washington, D. C.
37 Cephalin. Cephalin of Egg Yolk, Kidney and Liver. P. A. Levene and C. J. West, New York.
38 Determination of Urea by Urease Method. D. D. Van Slyke and G. E. Cullen, New York.
39 *Studies on Physiology of Reproduction in Domestic Fowl. Effect of Feeding Pituitary Substance and Corpus Luteum Substance on Egg Production and Growth. R. Pearl, Chicago.
40 Changes in Weight and Composition of Fasting Lobsters. S. Morgulis, New York.
41 Lewis and Benedict Method for Estimation of Blood Sugar; Obtained in Disease. V. C. Myers and C. V. Bailey, New York.
42 Is Autolysis an Autocatalytic Phenomenon? M. Morse, Omaha.
43 Occurrence of p-Hydroxyphenylethylamin in Various Mistletoes. A. C. Crawford and W. K. Watanabe, San Francisco.

39. **Physiology of Reproduction in Domestic Fowl.**—Pearl found that feeding the desiccated substance of the anterior lobe of the pituitary body of cattle to hens in laying condition but at a time of year when the rate of fecundity is declining, does not stimulate the ovary to an increased rate of production. Feeding the same substance (pituitary body, anterior lobe) to growing pullets does not bring about any earlier activation of the ovary than occurs in normal control pullets not fed this substance. The anterior lobe of the pituitary body from cattle when fed to growing chicks is accompanied by a distinct retardation in growth in body weight. This confirms for the chick the results which have been obtained with this substance by other investigators in mammals. The feeding of the desiccated substance of corpus luteum brings about a retardation of growth about twice as great in amount as that following pituitary feeding, as above noted. Neither pituitary substance (anterior lobe) nor corpus luteum substance when fed to laying pullets causes any retardation in the attainment of sexual maturity as indicated by the laying of eggs. The birds so fed begin to lay eggs at the same age, but at a smaller body weight than the normal controls. Some of the essential safeguards for the critical conduct of organ substance experiments with poultry are discussed.

Journal of Laboratory and Clinical Medicine, St. Louis

February, I, No. 5, pp. 283-370

44 *Condition of Vasoconstrictor Center During Development of Shock. G. Seelig and D. R. Joseph, St. Louis.
45 *Physiology of Parathyroid Glands. W. F. Koch, Detroit.
46 *Further Studies in Nicotin Tolerance. C. W. Edmunds and M. I. Smith, Ann Arbor, Mich.
47 *Hexamethylenamin as Urate Solvent and Diuretic, and Its Effect on Reaction of Urine. P. J. Hanzlik, Cleveland.
48 *Gonococcus Complement Fixation: New Lipoid Antigen. C. C. Warden, Ann Arbor, Mich., and L. E. Schmidt, Chicago.
49 Fetal Erythroblastosis: Fetal Erythroblastomatosis. P. G. Woolley, Cincinnati.
50 New Operating Table and Head Holder for Experimental Purposes. D. E. Jackson, St. Louis.

44. **Vasoconstrictor Center During Development of Shock.**—The problem which Seelig and Joseph worked on was essentially this: Can one obtain any conclusive evidence that, during the development of shock, the vasoconstrictor center at any time loses its activity? They attacked the problem on this basis: If the vasoconstrictor nerves to one ear are cut all influence of the vasoconstrictor center over the vessels of that ear is removed. The denervated vessels might then be expected to react more or less passively to changes of pressure within them. If the heart were maintaining a high blood pressure these vessels should become passively dilated. If, on the other hand, the blood pressure were low they should be correspondingly less dilated. In other words, the control vessels of the denervated ear should react passively no matter what the pressure within them. The vessels of one ear were denervated by resecting and severing under ether anesthesia, the auricularis magnus nerve at the base of the pinna and removing the superior cervical sympathetic ganglion on the same side. In no case was the animal reduced to a state of shock immediately following the denervation of the ear. Twenty-five experiments were performed. The interval between denervation of the blood vessels of one ear and the production of shock varied from twenty hours to twelve days.

The results of these experiments is summarized as follows: Denervated blood vessels usually show the best passive response to internal pressure changes when used within twenty-four hours after their denervation. Normally innervated ear vessels are strongly constricted while the animal is sinking into a condition of shock and after shock has developed. This strong vascular constriction persists even though the blood pressure be raised well toward the normal level (at a time when the animal shows distinct symptoms of shock). This vasoconstriction is due to the activity of the vasoconstrictor center because (*a*) the control denervated vessels become strongly dilated under the influence of the same pressure and (*b*) the constriction of the normal vessels themselves disappears at once if their connection with the vasoconstrictor center is destroyed by cutting the nerves, or by abolishing their conductivity with ether or by freezing. Since a fairly high degree of activity of the vasoconstrictor center can be demonstrated even after the blood pressure has fallen to a low level and reflexes are sluggish, the authors believe it is justifiable to conclude that a paralysis or failure of the vasomotor center is not the primary cause of the other symptoms of surgical shock.

45. **Physiology of Parathyroid Glands.**—The urines were collected separately from forty-seven parathyroidectomized dogs. Especially designed cages were used to avoid fecal contamination. The urines were filtered and evaporated to a syrup by an electric fan at a temperature not above 20 C. The residues were dissolved in alcohol, filtered and evaporated, and this process repeated until the last evaporate dissolved readily in alcohol. The lipoids present were extracted with ether and the residue taken up in water. This solution was cautiously precipitated with picrolonic acid. Several insoluble picrolonates were thus obtained, and by recrystallization from water and alcohol were purified. These substances Koch tested for physiologic activity. Two of them were found to modify the blood pressure when injected intravenously into anesthetized dogs. When injected intraperitoneally into nonanesthetized animals they exhibit very marked toxic effects. They were therefore selected for analysis. One substance was found to reduce gold chlorid quite rapidly, and picrolonic acid slowly. Koch therefore tested for an aldehyd group. With ammoniacal silver nitrate no mirror was obtained but instead a yellow gray precipitate whose solubility resembles that of silver cyanid. The substance itself freed from picrolonic acid is practically neutral in reaction, very soluble in water and alcohol, somewhat soluble in ether. It gives a picrolonate in the form of very fine microscopic needles which melt at 118 C., solidifying rapidly to an orange colored mass which melts with decomposition at about 230 C.; 0.249 gm. is soluble in 100 c.c. of hot water. The substance agrees in percentage composition with the picrolonate of methylcyanamid. The other substance

isolated from the urines and having a physiologic action is basic in reaction. It is less soluble in water than the first substance. Its picrolonate crystallizes from water forming small orange colored mounds. The picrolonate melts at 232 C. with decomposition. The substance agrees in composition with the picrolonate of trimethylmelamin which is the polymer of methylcyanamid. Because of the agreement in chemical and physiologic properties the substances may be considered identified as methylcyanamid and trimethylmelamin.

The methylcyanamid isolated from the urines and the synthetic methylcyanamid were injected intraperitoneally in nonanesthetized dogs and found to have similar effects. In small doses they produce extreme vasodilatation observed in the reddening of the sclera and swelling and reddening of the tongue. Larger doses cause paralysis and convulsions. Still larger doses cause an extremely rapid death. Intraperitoneal injection of 27 mg. of the synthetic substance into a rabbit of 1.5 kg. body weight produced after sixteen minutes very marked vasodilatation observable in the air vessels, and labored breathing accompanied by wheezing suggestive of bronchial stricture. In this condition the animal rapidly developed tremors and tetany with the head thrown back and hind limbs extended. After a few minutes the tetany gave way to coma resulting in death. An injection of 22 mg. of natural substance in a rabbit of 1.25 kg. produced death very similarly, although the tetany was not marked and the dyspnea and coma symptoms predominated. On the other hand, 4 mg. injected intraperitoneally into a white rat of about a 100 gm. weight caused death practically instantaneously with opisthotonos, developing no coma whatever. The similarity in the behavior of the parathyroidectomized dogs, to that of the nonanesthetized animals treated with the substance isolated from the urine, is further indication that this substance is responsible for the symptom complex of parathyroid insufficiency. The data therefore justifies the following conclusions: 1. Somewhere in the body methylcyanamid is generated. 2. This substance has a physiologic value in normal animals. 3. After parathyroid extirpation the substance accumulates in toxic quantities, and is responsible for the death of these animals.

46. **Studies in Nicotin Tolerance.**—The conclusions Edmunds and Smith draw from their work are that the livers of all dogs possess some power to destroy nicotin and that the destroying agent is probably a ferment. It is possible that this ferment may be increased in quantity by the constant use of the alkaloid, but their experiments do not furnish any support for this theory. The main difficulty appears to be that under normal conditions the destroying powers of different livers vary so much in strength that it is almost impossible to state that it has been increased by treatment.

47. **Hexamethylenamin as Urate Solvent and Diuretic.**—Hanzlik emphasizes the fact that hexamethylenamin per se in small quantities, or therapeutic doses, imparts to urine no demonstrable urate solvent qualities. Slight and practically negligible uric acid solvent effects are imparted to urine by excessive doses of hexamethylenamin, and in this the effects of the common alkaline diuretics are pharmacologically and economically superior. There is no evidence that hexamethylenamin can dissolve urate calculi. Regarding the efficiency of the class of drugs called "urate solvents," Hanzlik says that the statement of Fränkel (1906) is quite to the point and appropriate, namely, that no substance has yet been discovered which would form either soluble or easily oxidizable compounds with uric acid under conditions of the body.

48. **Gonococcus Complement Fixation.**—This article presents in detail the conclusions summarized in the preliminary report made before the Section on Genito-Urinary Diseases at the San Francisco meeting of the American Medical Association, detailing the work done with the fats of the gonococcus as antigen in gonococcus complement fixation tests, the superiority of an alcoholic solution of these fats over watery extracts being shown.

Journal-Lancet, Minneapolis

February 15, XXXVI, No. 4, pp. 93-126

51 Laminectomy Under Local, Not Spinal Anesthesia. A. C. Strachauer, Minneapolis.
52 Local Anesthesia. L. E. Daugherty, St. Paul.
53 Organization and Cooperation. J. Grassick, Grand Forks, N. D.
54 Infections of Mouth. G. B. New, Rochester, Minn.
55 Anaerobic Bacteria and Their Relation to Surgery. G. H. Twining, Mobridge, S. D.

Journal of Nervous and Mental Disease, Lancaster, Pa.

February, XLIII, No. 2, pp. 105-200

56 *Localization of Function in Canine Cerebellum. E. G. Grey, Boston.
57 *Value and Meaning of Adductor Responses of Leg. A. Myerson, Boston.
58 Speech Conflict; Natural Consequence in Cosmopolitan Cities as an Etiologic Factor in Stuttering; Report Based on Two Hundred Cases. M. K. Scripture and O. Glogau, New York.

56. **Localization of Function in Canine Cerebellum.**—The results of Grey's experiments tend to support the hypothesis that the question of a localization of function in the cerebellar cortex is still in dispute. Previous investigations have shown that the gradual amelioration of symptoms, which follows removal of the cerebellum, does not occur in animals in which the sensorimotor spheres of the cerebrum have also been destroyed. When the sensorimotor areas are destroyed some weeks subsequent to a primary ablation of the crus secundum (lobulus ansiformis) or the lobulus simplex of the cerebellum, the symptomatic evidences of the latter injury, which have subsided, reappear once more and persist over a long period. The results of Grey's experiments accordingly indicate the considerable value of this combination of lesions in the study of canine cerebellar localization.

57. **Value of Adductor Responses of Leg.**—The opinion is advanced tentatively by Myerson that the adductor responses belong to the tonic responses of muscles habitually maintained in tonus by some influence other than the cerebrum; that in health this tonus being less important for the preservation of attitude than the tonus of the extensor group of muscles, is not to any great extent demonstrable as the adductor response, but that in disease of various kinds, but having as their general feature either the functional or the organic injury to the cerebrum, these responses become manifest in the manner described. The adductor responses are present in health as mild and occasional homolateral and contralateral responses from sites described above. Fatigue does not increase them but diminishes them to the point of abolition. The appearance of contralateral adductor responses especially from the patellar tendon, the external condyle, the anterior superior spine, and to a lesser degree from the Achilles tendon, is a phenomenon of disease, not necessarily organic, but usually such.

Medical Record, New York

February 12, LXXXIX, No. 7, pp. 265-310

59 Rocky Mountain Spotted (Tick) Fever. H. C. Michie, Jr., and H. H. Parsons, Glendive, Mont.
60 Craving for Supernatural. T. A. Williams, Washington, D. C.
61 Sunlight Necessity for Maintenance of Health. J. W. Kime, Fort Dodge, Iowa.
62 Retroversion and Retroflexion. A. Jacoby, New York.
63 Improved Flexible Esophageal Bougie. R. C. Kemp, New York.
64 Experimental Study of Effect of Emetinized Blood on Typhoid Bacillus. M. Beckman, Natchez, Miss.

February 19, No. 8, pp. 311-352

65 Newer Practical Points in Treatment of Typhoid. B. Robinson, New York.
66 Constitutional Inferiority. H. M. Friedman, New York.
67 Physician, Know Thyself. A. MacFarlane, Albany.
68 Reminiscences of Chlorin. D. H. Stewart, New York.
69 Vaccine Therapy. G. A. Ehret, Cleveland.
70 Fatal Case of Cedar Oil Poisoning. W. D. McNally, Chicago.

Michigan State Medical Society Journal, Grand Rapids

February, XV, No. 2, pp. 57-104

71 Local Anesthesia in Abdominal Surgery. J. H. Jacobson, Toledo.
72 Cancer of Uterus. W. P. Manton, Detroit.
73 Conservative Surgery of Ovary. J. H. Carstens, Detroit.
74 *Report of Committee on Bacterin and Serum Therapy in Diseases of Eye, Ear, Nose and Throat. W. Haughey, Battle Creek.

75 *Heart Diseases in Children. W. J. Wilson, Jr., Detroit.
76 Dark Field Illumination Method in Diagnosis of Primary Syphilis. R. G. Owen, H. Snure and W. G. Pitts, Detroit.
77 Five Recent Cases of Primary Carcinoma of Vulva. F. M. Loomis, Ann Arbor.
78 Paralysis of Serratus Magnus Muscle Following Removal of Glands of Neck. C. D. Camp, Ann Arbor.
79 Multiple Syphilitic Ulcers of Lower Legs and Feet. F. E. Senear, Ann Arbor.

74. Abstracted in THE JOURNAL, Sept. 25, 1915, p. 1137.

75. Abstracted in THE JOURNAL, Sept. 18, 1915, p. 1055.

Modern Hospital, St. Louis

February, VI, No. 2, pp. 77-152

80 New Mount Sinai Hospital of Cleveland. W. S. Post, New York, and S. S. Goldwater, Cleveland.
81 Some of Hospital Standards of Tropical America. B. W. Caldwell, Santo Tomas, Panama.
82 Actual Values in Nauheim Bath System. C. G. Anthony, Saratoga Springs, N. Y.
83 Some Administrative Problems in Hospital Buying. C. S. Loder, New York.
84 New Isolation Unit, Hurley Hospital, Flint, Michigan. H. E. Davis, New York, and A. M. Schill, Flint, Mich.
85 Management of Food Supply of Hospital. E. P. Joslin, Boston.
86 Nuts and Nut Preparations in Dietary. J. P. Street, New Haven, Conn.
87 Admitting Department of Large Hospital. D. Poll, New York.
88 Unit Dressing Package. C. E. Black, Jacksonville, Ill.
89 Boiler Room Economics. T. Howell and P. Murray, New York.

New Jersey Medical Society Journal, Orange

February, XIII, No. 2, pp. 53-104

90 Prolapsus Uteri. A. A. Strasser, Arlington.
91 Significance of Urinary Findings. E. Klein, Bayonne.
92 The Specialist Problem. E. J. Marsh, Paterson.
93 Value of Hospitals to Cities. J. C. McCoy, Paterson.
94 Standardized Hospital and Its Obligations. G. K. Dickinson, Jersey City.
95 Diet in Hyperchlorhydria. E. E. Lupin, Bayonne.
96 Syphilitic Aortitis. J. Roemer, Paterson.

New York Medical Journal

February 12, CIII, No. 7, pp. 289-336

97 *Chaulmoogra Oil in Treatment of Leprosy. V. G. Heiser, New York.
98 *Treatment of Grippe. B. Robinson, New York.
99 So-Called Grippe. J. B. Rucker, Jr., Philadelphia.
100 Common Abdominal Crises. M. R. Bookman, New York.
101 With American Red Cross in Vienna. P. A. Smithe, Enid, Okla.
102 Diagnosis of Brain Tumor. H. Climenko, New York.
103 Tremor Tracings. H. Crenshaw, Atlanta, Ga.
104 Fracture of Skull. F. R. Barnes and M. A. Slocum, Philadelphia.

97. **Leprosy Treated with Chaulmoogra Oil.**—The mixture used by Heiser is prepared as follows: ℞ Chaulmoogra oil, 60 c.c.; camphorated oil, 60 c.c.; resorcin, 4 gm. Mix and dissolve with the aid of heat on a water bath and then filter. In one case cited Heiser began treatment by injecting into the buttocks 2 c.c. of the chaulmoogra oil mixture every eight days. The dose was gradually increased until on April 19, 1912, the patient was given 5 c.c. every three days. Feb. 21, 1913, the dose was gradually reduced to 2 c.c. October 13, the dose was gradually increased to 10 c.c., and since Feb. 14, 1914, he receives 5 c.c. and 10 c.c. on alternate weeks. A portion of the dose is frequently injected into the infiltrated lesions.

98. **Treatment of "Grippe."**—Robinson claims to have had excellent results from the following: ℞ Ammonii salicylatis, grs. iij; caffeinae, gr. ¼. M. Fiat capsula No. 1. M. Sig.: Two of these capsules should be taken by an adult, every two hours, for four or five doses, and then every three or four hours.

If the capsules cause slight nausea, which is rare, this may be neutralized by drinking a little vichy with each dose. Night and morning, a little carbolated petrolatum, 1.5 per cent., may be inserted into the nostrils. A mouth wash and gargle of liquor alkalinus antisepticus, well diluted with water, may be used with advantage, three or four times in twenty-four hours. If there are severe pains or fever, one half-grain of phenacetin should be added to each capsule and the effects watched by a physician. When the capsules are taken without phenacetin, the patient does not require careful watching.

Ohio State Medical Journal, Columbus

January, XII, No. 1, pp. 1-80

105 Care of New Born. H. J. Morgan, Toledo.
106 Recognition and Management of Threatening Diabetic Coma. L. A. Levison, Toledo.
107 Profession and Cancer Problem. J. S. Rardin, Portsmouth.
108 Relation of Industry to Medicine. E. R. Hayhurst, Columbus.
109 Physicians' Index. C. O. Beardsley, Ottawa.
110 Present Day Facts in Ophthalmology of Essential Importance to General Practitioner. R. Sattler, Cincinnati.
111 Progress in Therapeutics for 1915. J. W. Sheetz, Columbus.
112 Modification of Reeder-Dutrow Tonsil Knife. H. V. Dutrow, Dayton.

Public Health Journal, Toronto

February, VII, No. 2, pp. 59-114

113 Work of Bureaus of Child Hygiene and Medical Inspection in Schools. P. H. Bryce, Ottawa.
114 Few Hints to Medical Profession in Relation to Public Health Work. G. E. DeWitt, Wolfville, N. S.
115 Community Hygiene. J. K. Macleod, Sydney, N. S.
116 Menace of Inherited Defects. G. B. L. Arner.
117 Life of Young Nation. J. Grant, Ottawa.
118 Eradication of Tubercular Cattle from Milch Herds. A. W. Tracy, Sherbrooke, Que.
119 Antityphoid Inoculation. C. W. Bliss, Amherst, N. S.

Texas State Journal of Medicine, Fort Worth

January, XI, No. 9, pp. 461-514

120 Negro as Health Factor. O. Dowling, Shreveport, La.
121 United States Government Meat Inspection and How it Might be Supplemented by State and Municipal Inspection. A. O. Lundell, Fort Worth.
122 Preventive Medicine. A. C. DeLong, San Angelo.
123 Need of Conservation of Vital Assets. J. D. Covert, Fort Worth.
124 Vital Statistics. W. A. Davis, Austin.
125 Disinfection. A. L. Lincecum, Austin.
126 Health Conservation After Forty. J. L. Davis, Waco.
127 Facts Bearing on Cause of Pellagra. C. C. Parrish, Fort Worth.
128 Heisrath-Kuhnt Operations. W. R. Thompson, Fort Worth.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

November, 1915, XXXVIII, Part 3, pp. 191-389

1 Postural Activity of Muscle and Nerve. C. S. Sherrington.
2 Muscle Tonus. J. W. Langelaan.
3 Unmyelinated Nerve Fibers as Conductors of Protopathic Sensation. S. W. Ranson.

British Journal of Children's Diseases, London

January, XIII, No. 145, pp. 1-52

4 Cure of Squint. N. B. Harman.
5 Eleven Cases of Cerebrospinal Fever. E. C. Williams.
6 Cure of Suppurative Meningococcal Iridochoroiditis by Injections of Antimeningococcal Serum into Vitreous. A. Netter.

British Medical Journal, London

January 29, I, No. 2874, pp. 153-188

7 *Treatment of Gunshot Wounds of Knee Joint. A. L. Lockwood.
8 Epidemic Cerebrospinal Fever. E. C. Hort.
9 Studies in Antiseptics: Chloramine. H. D. Dakin, J. B. Cohen and J. Kenyon.
10 Gassing Accidents from Fumes of Explosives. L. G. Irvine.
11 Cases of Phlebotomus Fever at an Island in Eastern Mediterranean. J. T. D. S. Higgins.
12 Temperature Necessary for Destruction of Lice and Their Eggs. A. W. Bacot.

7. **Treatment of Gunshot Wounds of Knee Joint.**—The points on which Lockwood lays most stress are: That all foreign bodies, whether metal or loose bone, should be removed from the knee joint at the earliest possible moment. Perfect immobilization is absolutely necessary. Do not start passive movements too early; wait at least three weeks after the inflammation has subsided. Absolutely complete excision of all necrotic or even edematous tissue should be made. The capsule should be closed at the first operation if at all possible. Antiseptics, other than 1 per cent. saline or glycerin and formaldehyd mixture, should not be introduced into a joint. Tubes should never traverse the joint surface as in Barnard's method. Patients should not be moved till one is satisfied that infection has been successfully combated. Among sixty patients so treated there was one death. In this patient both the femur and tibia were badly comminuted and the joint was purulent on admission. The patient was a

cachectic, cadaverous looking man, with no resistance, and died in spite of early amputation. There were three amputations. In two patients there was bad comminution of both tibia and femur, with the joint full of pus, and the general condition of the patient was not good on admission. In one patient the amputation was done at once; in the other after five days in the hospital. In the third patient a hand grenade had absolutely shattered the joint and filled it with pieces of metal and dirt. Gas gangrene was present, and the leg was amputated at once. The results as to movement were as follows: ankylosis, 3; limited movement, 4; free movement, 49. Fracture of one or both bones existed in 53 per cent., bloody effusion in 96 per cent., and pus perceptible to the naked eye in 56 per cent. of cases. The bacteriologic reports on 42 cases showed that organisms were present in 76 per cent.

Lancet, London

January 29, I, No. 4822, pp. 227-280

13 *Gunshot Wounds of Chest. J. R. Bradford.
14 *Surgical Treatment of Gunshot Wounds of Chest. H. M. Davies.
15 Rationale of Chemotherapy in Syphilis. J. E. R. McDonagh.
16 *Simpson Light in Treatment of Venereal Lesions. E. G. Ffrench.
17 Influence of Febrile Conditions on Inoculation Agglutinins. H. L. Tidy.
18 *Fatal Case of Anthrax; Infection of Shaving Brush. E. H. Snell and E. W. G. Masterman.
19 Detachment of Retina. C. Higgens.
20 Thrombosis of Cerebral Arteries in Paratyphoid B. W. MacAdam.

13. **Gunshot Wounds of Chest.**—Approximately 25 per cent. of the cases of hemothorax referred to by Bradford were infected, and in 20 per cent. of the infected cases the infection was derived from the lung; that is, the fluid contained lung organisms; in the remaining 80 per cent. the infection was derived from the exterior—skin, soiled clothes, etc. In many of the infected cases, Bradford says, the clinical picture at first closely resembles that of a sterile hemothorax, and it is only by exploratory puncture, or even repeated exploratory puncture, that the diagnosis can be made. Usually the pyrexia, dyspnea, frequency of the pulse, and icterus are more marked, and the patient is obviously often very ill but it is extremely important to recognize the fact that not uncommonly at first he is not apparently very ill, and then suddenly most alarming symptoms develop, and unless promptly treated death ensues. Sometimes these urgent symptoms are suggestive of secondary hemorrhage, namely, a rapid pulse, cold clammy skin and urgent dyspnea. It was only as a result of some postmortem examinations made in such cases in the early months of the war that it was ascertained that these symptoms were due not to hemorrhage as was thought, but to infection with anaerobic gas producing organisms. Such cases may recover in an extraordinary way if they are recognized and the pleura promptly opened and drained, a local not a general anesthetic being used.

In another group of cases associated with anaerobic infection characteristic signs develop, suggesting the occurrence of pneumothorax. Thus the heart undergoes rapid outward displacement and a "cracked pot" percussion note is obtained which twenty-four hours previously was absent. The frequency of this "cracked pot" percussion note is remarkable, and Bradford thinks sometimes it might be regarded as almost pathognomonic of these cases. These cases are also liable to be erroneously diagnosed as merely cases of simple pneumothorax, as a bell sound is well marked. The patients in the cases associated with streptococci are usually very ill, with much fever, very rapid pulse, furred tongue, and diarrhea of the severe type is also often present. Contralateral pleurisy is much more common in these cases than in the simple sterile cases, and pericarditis and pneumonia also occur as complications. The mortality in the septic cases was much reduced by early recognition of the existence of the infection and prompt drainage by resection of a portion of a rib as soon as the bacteriologic evidence proved the presence of infection.

14. **Surgical Treatment of Gunshot Wounds of Chest.**—Davies emphasizes the necessity of having a manometer connected with the pleural cavity and of registering constantly the variations in intrapleural pressure, and of having means of controlling the same during operative interference on the closed chest. If such measures are adopted, and if the track of needles inserted into the chest is always anesthetized, there is a minimum of discomfort and a complete absence of danger to the patient. Davies has had, on the one hand, patients in bed with a localized positive pressure equal to 30 mm. of mercury, and up and about with a generalized unilateral pressure equal to 12 mm. of mercury. At the other end of the scale he has had patients tolerating without discomfort a negative pressure equal to 60 mm. of mercury during quiet respiration, and working with a negative pressure equal to 50 mm. of mercury.

16. **Simpson Light in Treatment of Venereal Lesions.**—From an extended experience of this treatment for venereal lesions Ffrench has come to the conclusion that the best results are obtained by giving a treatment three times a week (every other day) with an exposure of two minutes' duration and varying the treatment with the open and focal rays from time to time according to the condition of the lesion.

18. **Fatal Case of Anthrax.**—Smears of the blood from around the pustule showed many anthrax bacilli, some of which were abnormally swollen. Cultures from this blood on a sloped agar tube yielded colonies of *Staphylococcus albus* and *Bacillus anthracis*. From these latter subcultures have been made. After death the spleen was removed and smears of the spleen pulp showed abundant *Bacillus anthracis*. The shaving brush of the deceased was found to contain anthrax spores. Four of the other brushes were examined, with negative results. The source of infection was therefore not clear, as the shaving brush used conceivably might have been infected from the skin. Two of seven other brushes secured from the same stock as the patients contained virulent anthrax spores.

Practitioner, London

February, XCVI, No. 2, pp. 131-230

21 Treatment of Urgent Pleurisy. S. West.
22 *Citrated Whole Milk Method in Feeding of Infants. E. Pritchard.
23 *Use of Undiluted Citrated Milk in Feeding of Infants. R. Carter.
24 Recent Obstetric and Gynecologic Cases at London Hospital. R. D. Maxwell.
25 Skin Grafting in Mastoid Operations. H. J. Marriage.
26 Surgical Efficiency—Plea for Better Facilities and Training. J. H. Watson.
27 Recent Work in Radium Radiology and Electrotherapeutics. N. S. Finzi.
28 Recent Work on Diseases of Nervous System. H. C. Thomson.
29 Some Prescriptions and Their Use. A. Graham-Stewart.
30 Hysterical Anesthesia in Egyptians. A. E. A. Ismael.
31 Case of Dislocation of Spleen with Torsion of Its Pedicle. H. Angus.

22. **Citrated Whole Milk Method in Feeding Infants.**—Pritchard pronounces the citrated whole milk method as being physiologically unsound, because it allows no latitude for adaptation to the individual's digestive, assimilative, metabolic and secretory activities, and claims that its use imposes obligatory modification of the infant. It affords little scope for the study of the influence of variations in the diet. If the principles of percentage feeding are understood, a satisfactory food can be synthesized in a great variety of ways to satisfy the physiologic requirements of any particular child; and dried milk, if properly modified and of good quality, has all the advantages, and few of the disadvantages, of so-called dairy milk.

23. **Undiluted Citrated Milk in Feeding of Infants.**—Carter gives undiluted sterilized milk one tenth of the body weight, he insists on clock like regularity of feeding, and makes the intervals between the feeds as long as possible, so that the stomach is empty before the next meal. Contrary to the generally accepted method of giving 2 grains of citrate of soda to each ounce of milk, he gives only 1 grain. Receive the milk in a clean jug, and then place the jug in a saucepan of water, and allow the water to boil for five minutes. Each meal is prepared separately. Carter has always had good results with undiluted citrated milk using it as a routine method, but much better results are obtained by abandoning all routine methods and concentrating more on the individual requirements of each case.

Archives des Maladies du Cœur, etc., Paris

December, 1915, VIII, No. 12, pp. 437-527

32 Muscle Fibers in Heart Valves. (Note sur quelques points nouveaux de la structure des valvules du cœur.) A. F. S. Kent (Bristol).

33 *Blood Obtained by Puncture of Vein Best for Serodiagnosis. (Comment recueillir le sang pour éviter les erreurs dans le séro-diagnostic.) M. Parvu.

34 Intoxication from Asphyxiating Gases. (Sur les troubles cardio-vasculaires et l'état du sang dans les intoxications par les gaz asphyxiants des allemands.) J. Heitz.

33. **Improved Technic for Preliminaries to Serodiagnosis.**—Parvu presents arguments to show that it is far from being immaterial whether the blood for the Wassermann or similar tests is drawn from the finger or the ear, or by puncture of a vein, or whether the serous fluid in a blister is taken. His extensive research has shown that the antibody content is always highest in the blood obtained by puncture of a vein. Hence this should be used in testing for antibodies; positive results may be obtained here when the blood from the ear or finger is constantly negative. Error from this was noted in 40 per cent. of twenty cases examined for the purpose. There is also danger of contamination with the other technics, which is avoided with the vein puncture, while the serum obtained in this way contains the maximum of antibodies, alexins and hemolysins. He emphasizes further that the blood must be allowed to clot naturally; the ten or twelve hours which this requires allow time for the leukocytes to yield up to the serum all their lysins and antibodies. The blood should never be centrifugated or defibrinated for serodiagnosis; otherwise the leukocytes keep alive and retain the antibodies. This is easily demonstrated by testing the serum for antibodies, alexins and lysins at different stages of the coagulation process. He usually waits till next day before decanting the serum.

Archives Mens. d'Obstét. et de Gynécologie, Paris

November, 1915, IV, No. 11, pp. 401-432

35 The Rôle of Glycogen in the Normal Uterine Mucosa. L. F. Driessen (Amsterdam).

Bulletin de l'Académie de Médecine, Paris

January 11, LXXV, No. 2, pp. 21-48

36 Diagnosis of Pericarditis with Much Effusion in Chronic Nephritis. (Le frottement péricardique dorsal dans les péricardites brightiques à grand epanchement.) Chauffard.

37 *Measures to Transform Infected into Sterile Wounds and Close as Soon as This is Realized. (Fermeture secondaire des plaies de guerre.) A. Carrel, Dehelly and Dumas.

38 Reflex Paralysis and Relaxation with Mechanical and Electric Overexcitability of Muscles. (Paralysie et hypotonie réflexes avec surexcitabilité mécanique, voltaique et faradique des muscles.) Babinski and J. Froment.

January 18, No. 3, pp. 49-90

39 Pyoculture Not a Reliable Guide to the Prognosis. (De la pyoculture. Etude critique, d'après l'analyse de 29 cas.) S. Pozzi.

40 Excitability of and Conductibility in Wounded Nerves. G. Battez and R. Desplats.

41 Colon Bacilli Contamination of Beer in Flanders. (Recherches bactériologiques sur les bières des Flandres. II.) L. Roussel and others.

42 *Epileptic Seizures from Cicatricial Irritation of Peripheral Nerves. (Syndrome épileptique par irritation nerveuse périphérique ou épilepsie de Brown-Séquard.) A. Mairet and H. Piéron.

37. **Sterilization of Wounds and Immediate Closing.**—Carrel and his co-workers report experiences in which infected wounds, once thoroughly sterilized, healed by primary intention when closed at once. This prompt coaptating of the muscle fibers leads to healing with only a thin layer of cicatricial tissue, thus preventing the usual mass of cicatricial tissue which is such a hindrance to functioning. They sterilize the wound with their special 1:200 hypochlorite solution (See THE JOURNAL, February 5, p. 447), keeping the wound constantly irrigated with it, day and night. When the phenomena indicating infection have subsided and smears show reducing numbers of microbes in the secretions of the wound and finally their complete disappearance, the wound is closed. This is usually possible from the fourth to the tenth day. As the infection has been conquered, conditions are practically the same as in a fresh operative wound, and the tissues heal by primary intention when carefully coaptated. Strips of adhesive plaster, from 2.5 to 5 cm. wide, are applied perpendicularly to the wound to bring the tissues together, or clips can be used; no suturing is done unless circumstances compel it. This early closing of wounds gets the patients up much earlier, and this in turn aids in warding off stiff joints and atrophy.

42. **Brown-Séquard's Epilepsy.**—Mairet and Piéron state that they never encountered but one case of this kind in forty years of practice before the war, and have since seen but one case. In the latter, two nerves of the brachial plexus were irritated by cicatricial processes, and the irritation spread to the spinal cord and hence to the brain, bringing on convulsions and finally a typical and severe epileptic seizure. Both cases presented visual hallucinations; in the later case there was evidently a predisposition on the part of the nervous system. The tendency to convulsions was arrested early by measures to relieve the irritation of the peripheral nerves. One was by keeping the entire arm repeatedly in hot water for three hours at a time, after excision of the scar tissue. The tendency was thus broken up before the epilepsy had become chronic.

Journal de Médecine de Bordeaux

January, LXXXVII, No. 3, pp. 39-60

43 Protection Against Asphyxiating Gases. (La lutte prophylactique contre les gaz asphyxiants.) Richard.

44 *Internal Iodin Treatment in the Major Infections. (La thérapeutique iodée systématique dans les grandes infections.) L. Boudreau.

45 Ethyl Chlorid General Anesthesia and Military Surgery. (L'anesthésie générale au chlorure d'éthyle et la chirurgie de guerre.) J. Carles and A. Charrier.

46 Crutches and Artificial Legs. (Béquilles et appareils de prothèse.) Rouquette.

44. **Iodin in Treatment of Major Infections.**—Boudreau advocates systematic and intensive use of iodin as the most easily managed of internal disinfectants, the least harmful with the maximum of action, and the one to be preferred to all others unless there are formal contraindications. It seems to modify the "organic habits" while rousing and exalting the natural activities which have been slumbering or sluggish or perverted. Wherever there is infection he regards it as indicated—the fact that iodin is found naturally in the body gives confidence in the use of it. Iodin does not accumulate in the body but is rapidly eliminated, and hence the doses must be fractioned as much as possible and adequate amounts be given. Years of experience with it, he relates, have confirmed beyond question that it is microbicide and antitoxic, and has an intense stimulating action on production of leukocytes and on the functioning of the glands, especially of the ductless glands, besides a general tonic action on the vital functions. In septicemia of any kind it tends to break up "the bowel-blood vicious circle" and, given in time, especially in typhoid, seems to ward off the development of this vicious circle. He reiterates that iodin has no preference among bacilli; he gives it wherever fever develops, without waiting to differentiate its special cause. He discusses in particular typhoid, puerperal fever, epidemic meningitis, measles, scarlet fever, and whooping cough, saying that the intensive iodin treatment not only aids in throwing off the infection and reducing the contagiousness of the disease, but it seems to ward off complications. It does not conflict with but supplements vaccine and antitoxin treatment. He insists on the necessity for giving the iodin by the rapid-firing, small dose method, *doses mitraillées*, keeping them up day and night in acute infections, imitating thus Nature's methods. In whooping cough he gives 7 year old children an average of 60 drops of the official tincture of iodin of the French Codex, distributed throughout the twenty-four hours. [This tincture differs from the U. S. P. tincture; the French Pharmacopeia directs simply the solution of iodin in 90 per cent. alcohol: 1 part of iodin for every 12 parts of alcohol.—ED.] He states that children of 3 can take 40 or 50 drops without apparent harm. The results are excellent, shortening the course of the disease and warding off complications, especially when supplemented by local sterilization of the throat, rubbing the chest with balsam oil, and giving hot iodized baths.

His main contention, however, is that iodin should be given in tuberculosis and pushed to the extreme limits of tolerance. For some time he has been proclaiming that iodin must be regarded as the direct and heroic treatment for tuberculosis, and his continued experience has apparently confirmed this. He reiterates, however, again and again, that it is absolutely indispensable to begin with minute doses and work up very slowly and gradually to the large dosage. Boudreau's article was in press at the time the war broke out, and he adds to it that the war experiences of the last sixteen months with infectious diseases and infected wounds have merely reenforced all his statements.

Paris Médical

January 22, VI, No. 4, pp. 97-112

47 *Rats in the Trenches. (La destruction des rats dans les tranchées.) A. Loir and Legangneux.
48 Importance of Alcoholism as Factor in Typhoid Mortality. (L'alcoolisme et la mortalité dans la fièvre typhoide.) M. Labbé.
49 Protheses Restoring Function in Paralyzed Muscles. (Méthode de prothèse fonctionnelle.) Pierre-Robin.
50 Simulation in the Army. V. Audibert.
51 Management of Comminuted Fractures. (Esquillectomies larges et pseudarthroses.) E. Mériel.

47. **Squill as Rat Poison.**—Loir and Legangneux mention that one rat catcher in the trenches of the Aisne and the Marne killed 5,457 rats in 105 days. At Havre, squill has been found quite effectual as a rat poison. It is mixed with equal parts of chopped meat, to form balls of about 5 gm. each. It attracts the rats still better when one drop of anise is added to a paste made with 5 gm. squill, 20 gm flour, 20 gm. powdered fennel and grease enough to mix into a hard paste, cut up into tablets of about 10 gm. each. A few scraps of calcium carbid in the rat hole, the outlets closed with dirt, will generate acetylene gas enough to kill rats, if water is poured on it.

Presse Médicale, Paris

January 17, XXIV, No. 3, pp. 17-24

52 Critical Study of Artificial Legs. (Etude critique des appareils de prothèse français pour amputations de jambes.) Ducroquet.
53 Charts Showing Decline of Typhoid Fever Since Vaccination. (Vaccination et paratyphoides.) M. Labbé.

January 20, No. 4, pp. 25-32

54 *Complications of Paratyphoid. (Sur les complications des paratyphoides.) J. Minet.
55 *Determination of the Functional Capacity of the Heart. (Epreuve fonctionnelle circulatoire. Appréciation de la puissance de réserve du cœur.) A. Martinet.

54. **Complications of Paratyphoid.**—Minet relates that he had always supposed that paratyphoid fever was a mild affection, over in two weeks, but since he has been in charge of a typhoid hospital near the front he has learned that its localizations and complications are liable to be the same as with typhoid, although less frequent. In 60 paratyphoid cases there was intestinal hemorrhage in 3. The hemorrhages kept up for several days and in one case returned two weeks later, but the men recovered. Another paratyphoid B patient developed acute angiocholecystitis, with liver colic, in the course of which the pulse became thready and the heart beat 160. The man died suddenly when apparently on the road to recovery. In 2 cases there was paratyphoid phlebitis, with recovery; and physical signs of myocarditis were manifest in 19. Heart tonics were given regularly to all; epinephrin was a valuable aid in some cases; caffein gave no relief. Minet never fails to examine the heart regularly, every day, in every paratyphoid case. All his other patients recovered. In 7 of his 60 cases there were pleuropulmonary complications like those encountered in typhoid. In one case paratyphoid bacilli were found numerous in the sputum, some preexisting lesion having afforded a nest for the bacilli, entailing a chronic process. In time the preexisting infectious germs got the upper hand and crowded out the paratyphoid bacilli.

55. **To Determine the Reserve Force of the Heart.**—Martinet emphasizes that the heart and vessels form a single mechanical system so that any reaction at any point in the system is felt at various other points. By testing the changes induced passively by change of position and actively by exercises, we get a good insight into the functional capacity, the ability to maintain the normal balance between the parts. He gives here the charts from a few out of fifty persons tested by a standard technic. The pulse is counted until two successive minutes are the same beat, first as the patient lies flat, then as he stands erect. The minimum and maximum tension are taken at the same time. By waiting until the beat is regular through two periods, emotional fluctuation is excluded. This he calls the static test. Then the exercise or dynamic test is made by deep bending of the knees, done twenty times at the rate of sixty or seventy times a minute. The pulse and the tensions are then recorded each minute for from three to five minutes. The patient then reclines anew and the pulse and pressure are recorded again. A chart showing the records presents at a glance the conditions in the cardiovascular apparatus as the variations from the normal range are so striking. These tests reveal latent weakness of the heart by bringing on a transient phase of asystole. They will also aid in distinguishing between organic and purely functional weakness. The static test shows up particularly any tendency to vasomotor weakness: the tachycardia is exaggerated while the sphygmomanometer reaction is weak or negative. The exercise test reveals any tendency to weakness on the part of the heart, by the same exaggeration of the tachycardia with slight or no sphygmomanometer reaction and further by the delay before the previous balance in the circulation is restored. These reactions are in fact those of induced hyposystole.

Berliner klinische Wochenschrift

November 8, 1915, LII, No. 45, pp. 1153-1176

56 *Treatment of Simple Pruritus. (Entstehung und Beseitigung des Juckens. 4. Der einfache Pruritus.) P. G. Unna.
57 Neurology in War. (Ergebnisse der kriegsneurologischen Forschung.) H. Oppenheim.
58 Internal Medicine in War. (Aufgaben und Probleme der inneren Medizin im Kriege.) Goldscheider. Commenced in No. 44.
59 *Cancer of the Gallbladder Usually Symptomless or Masked. (Die Schwierigkeiten der Erkennung des Gallenblasenkrebses am Anfang und Ende dieser Krankheit.) H. Kehr.
60 *Vascular Disease and Syphilis. (Zur Kenntnis der Gefässerkrankungen infolge von Lues.) C. Friedländer.

November 15, No. 46, pp. 1177-1200

61 Simple Pruritus. P. G. Unna. See abstract 56.
62 *Albumin-Poor Diet in Nephritis. (Zur Behandlung der Nierenkranken.) F. Hirschfeld.
63 Constantly Negative Wassermann Reaction in Twelve Cases of Pemphigus. (Ueber das angebliche Vorkommen einer positiven Wassermann'schen Reaktion beim Pemphigus.) E. Nathan.
64 Agglutination in Dysentery. (Die Agglutination bei Ruhr und ruhrartigen Erkrankungen.) L. Dünner.
65 Later Course of Gunshot and Shell Wounds of the Skull. (Zur Klinik der Schädelschüsse nach den Erfahrungen im Heimatlazarett.) E. Hayward. Concluded in No. 47.

56. **Simple Pruritus.**—By this term Unna means itching not restricted to any one locality, but either universal or shifting about under the influence of chronic intoxication or senility. The intoxication may be from quinin or arsenic, tobacco or intestinal helminths, chronic jaundice, diabetes, albuminuria or senility. The factor common to all these, he explains, is toxic injury of the nerves of the vascular capillaries from some toxin with reducing properties. This injury fluctuates with the intensity of the toxic action, and hence the itching increases and subsides with it. All disappears without leaving a trace as the underlying constitutional affection or intoxication is cured. Copious drinking helps to wash out the toxins. Venesection followed by injection of Ringer's fluid would have to be repeated often to be effectual, and is thus not practicable. A course of mineral waters is useful and he recommends as the simplest form of this a mixture of 40 parts sodium chlorid; 1 part calcium chlorid; 8 parts potassium chlorid and 8 parts sodium percarbonate. Of this oxidizing mixture 4 or 5 gm. are dissolved in 2 liters of water and the whole sipped in the course of twenty-four hours. For local application he commends oxidizing baths or an oxidizing salve to rub into the skin. The rapid benefit from this oxidizing treatment of pruritus, with or without jaundice, confirms that the elements in the blood which are responsible for the itching are of reducing nature. For immediate relief he knows of nothing to compare in effectiveness with monochlorbenzol (chlorbenzene) which penetrates the skin at once without damaging it and relieves the itching

for several hours or the whole night. The surface can be washed off or sprayed with the solution of 1, 2 or 5 parts of chlorbenzene in alcohol to 100 parts. (See previous abstracts of Unna's study of pruritis, THE JOURNAL, January 15, p. 227, and February 19, p. 609.)

59. **Cancer of the Gallbladder.**—Kehr states that a permanent cure has been realized in only one of his forty-nine operative cases of primary cancer of the gallbladder. In this single case the gallbladder had been removed for chronic inflammation and the microscopic discovery of the cancer was a surprise. It had given no signs of its presence. In a total compilation of 350 operations for cancer of the gallbladder a permanent cure is known in only 2.3 per cent. This bad record is because it is impossible to diagnose cancer of the gallbladder in an early stage, and because chronic inflammation of the gallbladder is not given operative treatment early enough. The only prophylaxis available at present is to remove the gallbladder when chronic cholecystitis proves rebellious to a course of proper internal treatment. He warns that the combination of a hard, knobby tumor in the gallbladder with ascites, cachexia and jaundice, even without any history of colic, may be the manifestations merely of a simple gallstone trouble. If it is assumed to be cancer and operative treatment is advised against as hopeless, the patient may die from the entirely benign affection. Only when there are several knobby tumors, intense jaundice and extreme ascites, with enlargement and cirrhosis of the liver can we be practically certain of malignant disease. The pain is no criterion. In fact, he declares, no progress has been made in recent years in the positive diagnosis of malignant disease of the gallbladder, especially in its early or its latest stages.

60. **Connection of Syphilis with Vascular Disease.**—Friedländer reviews the literature on this subject, remarking that the tendency now is to exaggerate the share of syphilis in the production of aneurysm of the aorta and other vascular affections. He admits that the artificial production of aneurysm by injection of spirochetes, as reported by Vanzetti, is demonstrative evidence, but, on the other hand Friedländer and von Zeissl never found any special tendency to aneurysms among the thousands and thousands of syphilitics applying to the dermatologic clinic and the Jubilee Hospital at Vienna.

62. **Treatment of Kidney Disease.**—Hirschfeld relates a number of case histories to demonstrate the advantages in chronic kidney disease of restricting the intake of albumin. When the daily total is kept down to 40 gm. albumin, with only 30 gm. of absorbable albumin and about 5 gm. sodium chlorid, far-reaching improvement follows, especially with contracted kidney. The diet should consist of vegetables, potatoes, rice, green vegetables, cream, sugar and large amounts of fruit in every form. The output of urine becomes reduced to three quarters of a liter in the twenty-four hours, and it is generally alkaline or neutral or weakly acid; in the latter event it can be made alkaline by giving 1 or 2 gm. sodium bicarbonate or sodium citrate daily. When the urine becomes alkaline, the albumin disappears from it more or less completely. On this albumin-poor diet the urine contains about 5 gm. nitrogen, 5 or 6 gm. salt and a total of about 25 gm. solids, in contrast to the 60 or 70 gm. on an ordinary diet. The specific gravity ranges between 1.011 and 1.014. The blood pressure generally begins to go down in about two weeks. After several weeks of this diet, if a meal with much albumin is given there is usually considerable polyuria a few hours later. Muscular exercise retards this polyuria. It also retards elimination of nitrogen. For this reason it is better to permit food more liberal in nitrogen only when complete repose can follow.

Correspondenz-Blatt für Schweizer Aerzte, Basel

January 22, XLVI, No. 4, pp. 97-128

66 Criminal Responsibility and Hysterical Irresponsibility. (Verantwortlichkeit und hysterischer Dämmerzustand.) C. Strasser.

Deutsche medizinische Wochenschrift, Berlin

November 18, 1915, XLI, No. 47, pp. 1385-1416

67 *Is it Really Entirely Impossible to Make Prostitution Harmless from the Standpoint of Health? (Ist es wirklich ganz unmöglich, die Prostitution gesundheitlich unschädlich zu machen?) A. Neisser.

68 Prophylaxis of Camp Typhoid by Disinfection of the Hands. (Typhusbekämpfung im Felde durch ein einfaches Verfahren zur Händedesinfektion.) K. W. Joetten.

69 Bile-Agar for Cultivation of Typhoid Bacilli. (Die Typhusbazillenzüchtung mittels der Galleschrägagarröhrchen.) H. Koenigsfeld.

70 Gastro-Intestinal Affections in Soldiers. (Zur militärärztlichen Beurteilung und Behandlung der Magen-Darmkrankheiten im Krieg.) L. Roemheld.

71 Standard Tests for Estimation of Functional Capacity of the Heart. (Zur Funktionsprüfung des Kreislaufs, speziell bei Erschöpfungs- und Fieberzuständen.) J. Schütz.

72 Necrosis of the Gallbladder after Typhoid. (Nekrotisierende Cholecystitis typhosa.) O. Orth.

73 Explosive Action of Bullets in Organs Containing Fluids. (Hydrodynamische Wirkung der Infanteriegeschosse.) M. Reuter.

74 Transportable Bathing Establishment. (Badegelegenheit im Felde.) Buschan.

75 Sanatoriums for the Young. (Ueber Jugend- und Schulsanatorien.) Sexauer.

January 13, XLII, No. 2, pp. 33-60

76 Duodenal Ulcer. I. Boas. Concluded in No. 3.

77 *Action of Blood Charcoal on Digestion. (Ueber die Einwirkung von Blutkohle auf die Magenverdauung.) H. Strauss.

78 Wounds of the Chest and Lungs. (100 Brust- und Lungenschüsse.) Lonhard.

79 Injuries of the Hearing Apparatus in War and Their Treatment. (Gehörverletzungen im Stellungskriege und ihre Behandlung beim Truppenteil.) A. Peyser.

80 Gas Gangrene. (Ergebnisse der bisherigen kriegschirurgischen Erfahrungen. III.) H. Matti.

81 *Two Weeks' Quarantine for Cholera. (Unzulänglichkeit der Beobachtungsdauer bei Cholera.) J. von Daranyi.

82 *Psychoses Connected with Abnormal Internal Secretion. (Ueber dysglanduläre Psychosen.) A. Fauser.

83 "Christian Science." (Christliche Wissenschaft.) F. Köhler.

67. **Is Sanitation of Prostitution Impossible?**—Neisser says that sanitation of prostitution has never been really attempted. It is a medical, not a police question. Clandestine prostitution is particularly dangerous on numerous accounts. This, he thinks, should be combated by providing opportunities for free examination and treatment of venereal disease. There should be social service work, enlightening and educating the girls and women, striving to turn them aside from illicit intercourse and aiding them in self-support. He regards it as an essential feature of these dispensaries that they should not insist on a course of hospital treatment. The results would be better, of course, in the individual case, but the dread of being sent to the hospital would deter others from coming to the dispensary. More welfare work and social service, more preventive control with specialist medical treatment will certainly reduce the number of female sources of infection, and secondarily of the male sources.

The treatment of each venereal affection is discussed in detail. Soft ulcer he wipes off with pure phenol and then applies a cotton pad greased with petrolatum containing 10 per cent. of some silver salt. Iodoform is more effectual, but its odor precludes its use. The phenol application should be renewed daily as long as necessary, and the necessity for keeping the entrance to the vagina thoroughly coated with petrolatum should be impressed on the patient. This not only tends to protect the male but it protects the female against another crop of soft ulcers. Copious greasing of the entrance to the vagina and to the urethra also affords some protection against gonorrhea. In any event, a well greased cotton pad should be placed over the mouth of the uterus to protect it against gonorrhea and also to protect the male against gonorrheal uterine processes already installed. For local treatment he uses urethral bougies containing 10 or 20 per cent. of some silver salt, with 30 parts starch, 4 parts tragacanth and 20 parts acacia. One of these medicinal bougies is introduced every day, or two in a day, and a cotton pad applied to hold in the melting mass. This reduces the contagiousness materially, and in time will realize a cure, while a course of hospital treatment is thus avoided.

Prophylaxis of syphilis is still simpler, merely thorough greasing of the mouth of the vagina and the vicinity with petrolatum. Neisser regards the mechanical as the principal protecting factor, but it might be better to incorporate some disinfectant with the greasing material, such as calomel, as in Metchnikoff's 33 per cent. calomel salve. Prophylactic salvarsan treatment he urges not only for those with known syphilis but as a prophylactic for all prostitutes.

77. **Action of Animal Charcoal on Gastric Digestion.**—Strauss has become convinced of the advantages of kaolin and animal charcoal in treatment of infectious intestinal troubles, especially dysentery. He prefers the charcoal, pulverized as fine as soot, and has given it for weeks at a time to patients without impairing their appetite except in the rarest cases. Various writers have asserted that kaolin and charcoal interfere with digestion by adsorbing the digestive ferments, but Strauss presents evidence to prove that although this adsorption proceeds regularly in the test tube, the living digestive apparatus tends to keep the digestive ferments at a certain level. More is secreted to take the place approximately of what has been adsorbed. In gastric and duodenal ulcer it has the additional advantage of settling as a protecting coating over the ulceration. It proved useful also in dysentery given in enemas. He tabulates the findings in thirteen persons and calls attention to the way in which charcoal adsorbs all occult blood in the gastro-intestinal tract.

81. **Cholera Quarantine Requires Two Weeks.**—Daranyi tells of epidemics of cholera started by healthy carriers who had been quarantined for the regulation five days. There is no knowledge to date of any instance in which the vibriones were found in carriers for more than two weeks. Up to the end of two weeks they are dangerous.

82. **Serologic Diagnosis in Psychology.**—Fauser's article is the concluding portion of an address on the protective ferments from the standpoint of psychiatry, delivered in April, 1914. He emphasizes that the importance of serologic findings is not belittled by the fact that they conflict with many prevailing clinical conceptions. They may permit finer differentiation of psychoses, the exotoxic, the endotoxic —the dysglandular, from the gross type of dementia praecox to the finer curable types, "degeneracy psychoses," "hysteria," "epileptoid conditions," etc. He enumerates a number of questions pressing for solution, declaring that we have made a beginning in the pathologic serology of the psychoses. Certain facts are already established: We know that the functioning of the brain cortex can be affected by the functioning of a gland with an internal secretion; this is proved by the benefit on the nervous and psychic manifestations of exophthalmic goiter after operations on the thyroid. Also by the favorable influence of operations on other forms of psychoses of thyroid origin. Other proof is afforded by the instances of exophthalmic goiter developing after a fright or other psychic trauma. He cites as a beautiful example of still another possibility, namely, the influencing of the functioning of a gland with an internal secretion, the observation of an American physiologist that cats subjected to prolonged annoyance showed an increased epinephrin content in their blood.

Jahrbuch für Kinderheilkunde, Berlin

January, LXXXIII, No. 1, pp. 1-96

84 *Alimentary Increase in the Sugar Content of the Blood in Infants. (Die alimentäre Glykämie des Säuglings.) A. Niemann.
85 Congenital High Scapula. (Fall von angeborenem Hochstand des Schulterblattes.) W. Hoffmann.
86 Uretha Stone in Boy of 14. (Interessanter Fall von Harnröhrenstein bei einem 14 jährigen Knaben.) J. V. Bokay.
87 *Treatment of Rachitis. (Zur Therapie der Rachitis. VIII.) E. Schloss.

84. **Alimentary Glykemia in Infants.**—Niemann has been applying to large groups of infants Bang's micromethod for testing the sugar content of the blood. He first determined the average content before the first feeding of the day and tabulates the findings at various periods after intake of carbohydrates. A large proportion of the infants invariably responded with alimentary glykemia, but the intensity varied within a wide range. The highest sugar content was found always in infants thriving well on large amounts of carbohydrate. This is the same group of infants that have retention of urine after intake of even small amounts of sugar. The sugar in them passes rapidly into the circulation and modifies the intermediate metabolism. These children seem to thrive on carbohydrates and do not require fats. Another group of infants show very slight alimentary glykemia when fed carbohydrates, and these children do not thrive on carbohydrates. They require fats; human milk may be indispensable for some of those in this group. Which of the two groups represents the normal one, he does not pretend to say, but expatiates on the importance of distinguishing these groups for proper feeding. This is possible now by the degree of the alimentary glykemia and the response in the output of urine after ingestion of a given amount of sugar. But it is often possible to ascertain merely from the kind of food the child has been getting whether it does best on carbohydrates or on fats; pallor, soap stools, etc., indicate the response to fat. (Niemann's previous communication on this subject was reviewed in these columns Aug. 21, 1915, p. 747.)

87. **Treatment of Rachitis.**—This eighth instalment of Schloss' long study of this subject consists mostly of tables giving the detailed metabolic findings of eighty rachitic children taking cod liver oil, calcium, or phosphorus, alone or in various combinations, during periods of natural or artificial feeding. (His last instalment was summarized in THE JOURNAL, Feb. 20, 1915, p. 703.)

Medizinische Klinik, Berlin

January 9, XII, No. 2, pp. 31-58

88 *Chemical and Biologic Factors Liable to Induce Lead Poisoning from a Bullet in the Tissues. (Die Gefahr der Vergiftung durch ganze oder zersplitterte, im Körper lagernde Geschosse.) L. Lewin.
89 Paravertebral Nerve Blocking for Remote Localized Anesthesia. (Ergebnisse bei weiteren 600 paravertebralen Anästhesien.) P. W. Siegel.
90 Paratyphoid. (Paratyphöse Erkrankungen.) L. v. Korczynski.
91 Wounds of Joints. (Felderfahrungen bei 80 Gelenkschüssen.) Kaehler.
92 Improvised Arrangement of Dump Car for Carrying Wounded. (Improvisierter Verwundetentransport auf Feldbahnen.) A. Partos.

88. **Danger of Poisoning from a Bullet in the Tissues.**—Lewin has long preached that scraps of lead in the tissues are liable to prove a source of constant generation of poison. He here offers evidence that lead may become transformed into lead hydroxid under the influence of moisture and the oxygen in the tissues, while the salt content of the tissue juices may also attack the lead. A bullet encapsulated in the lung was found incrusted with lead chlorid and this, we know, is soluble in 105 parts water at a temperature of 16.5 C. (62 F.). Fats, lipoids and pus also act on lead. The oil in sardine cans may take up lead from the solder and prove toxic in time. On account of this dissolving action of fats on lead, he warns against milk for persons exposed to lead poisoning. All the above chemical and still other factors act on a bullet in the tissues in time. The mills of the human body grind slowly. The action is greater the more surface presented by the lead; a whole bullet is less dangerous than when broken up into fragments. When lead is found in the urine of a person known to be harboring a piece of lead, this is a sign that the lead is being disintegrated and that lead poisoning is imminent or installed. He regards this as so serious that he would impose special rates for life insurance when there is a projectile in the tissues, even when it is giving no signs of its presence, and above all when lead is found in the urine, saliva or stools. Those not familiar with the manifestations of lead poisoning are liable to overlook or misinterpret them, especially the "lead breath," gouty-rheumatic or asthmatic disturbances, or parotitis, herpes zoster, nephritis, chronic constipation, liver derangement, ulceration in the duodenum, or certain heart disturbances exactly such as are encountered in persons free from lead poisoning. The eye, ear and other senses may show the effects of the lead poisoning, or there may be a neurasthenic condition which it is certainly not easy to trace to a piece of lead long ensconced in the tissues. In short, the symptoms from lead poisoning masquerade and deceive the profession, and this is why the danger from a bullet left in the tissues is not realized by physicians. A case of severe lead poisoning was reported in France in 1911 from a birdshot wound of the chest, which had suppurated. Denig and Neu published a report in 1915 of ninety-six wounded who had had a projectile in the tissues for from two weeks to several months. In 11.5 per cent. lead was found in the urine and saliva.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

January, XLIII, No. 1, pp. 1-94

93 Lack of Uniformity in Textbook Obstetric Measurements and Planes. (Unstimmigkeiten in geburtshülflichen Becken-Massen und -Ebenen.) L. Fuhrmann.
94 *Large Nonmalignant Vesicular Mole. (Ueber destruierende Blasenmole). J. A. Amann.
95 *Cultivation of Anaerobes in Febrile Puerperal Cases. (Zur Technik und Bewertung der Anaerobenzüchtung.) W. Lindemann.
96 Disturbance in Reflex Control of Puerperal Bladder. (Aetiologie der puerperalen Ischurie.) P. Esch.
97 *Improved Technic for Forceps Extraction. (Ueber die Anlegung der Zange am nicht rotierten Kopf mit Beschreibung eines neuen Zangenmodelles und einer neuen Anlegungsmethode.) C. Kielland (Christiania).

94. **Cystic Mole.**—In the case related, the otherwise healthy woman of 49 had four children and had passed through an abortion five months before. For the last year she had complained of sacral pains and pain in the right side. There had been recent hemorrhage from the uterus for four days, followed by a watery discharge, and a tumor could be palpated suggesting a soft myoma or sarcoma in the right side of the cervix. It proved to be a vesicular mole; the cystic villi had grown into the connective tissue, in and around the uterine cervix, reaching to the wall of the pelvis, but not invading the actual wall of the uterus which, with the endometrium, was intact. The uterus was removed, but it was impossible to get out all the convolutions of the mole. Complete recovery followed, with no signs of recurrence during the ten or eleven months since.

95. **Bacteriemia in Puerperal Febrile States.**—Lindemann reports that he found bacteriemia in 72 per cent. of twenty-nine cases of febrile abortion and in 50 per cent. of twenty-three women with slight fever after delivery at term. This high percentage of positive findings was due to the use of bacteriologic methods to reveal both aerobic and anaerobic bacteria. Study of the latter has broadened materially our knowledge of the bacteria that may be present after induced abortions, miscarriages and after deliveries. Anaerobic bacteria in the uterus might induce a misleading positive response to the lung-floating test. Experiences with criminal abortion testify that extremely virulent anaerobic germs, introduced from without, may entail the severest infections.

97. **Forceps Extraction.**—Kielland gives an illustrated description of his method of introducing the forceps, saying that it ensures a symmetrical, firm grip whatever the position of the head. It requires an exact knowledge beforehand of the position of the head, the direction of the sagittal suture and the location of the anterior and posterior fontanels. Also a slight modification of the forceps pattern. These are the only drawbacks, as the mechanical part, he reiterates, is much simpler and easier than with the ordinary technic. Only two fingers are used in introducing the blade, and this only to the lip of the os uteri, which reduces the danger of infection. The grip of the forceps is firm and does not change, and traction is exerted on the axis of the handle, while the blades press evenly on the skull their entire length, and less force is required for extraction.

Münchener medizinische Wochenschrift, Munich

January 11, LXIII, No. 2, pp. 37-72

98 *Fate and Action of Hot and Cold Beverages in the Stomach. (Schicksal und Wirkung heisser und kalter Getränke im Magen.) E. Egan.
99 Roentgen Localization of Foreign Bodies in the Tissues. H. Schmerz.
100 Practical Means to Help Crippled Soldiers to Help Themselves. (Praktische Kriegsinvalidenfürsorge.) Scholl. Concluded in No. 3.
101 *Benefit from Diathermia in Whooping Cough. (Eine neuartige Behandlung des Keuchhustens.) E. Ebstein.
102 Transient Disturbances in Senses of Smell and Taste after Neosalvarsan. (Perverse Geruchs- und Geschmacksempfindungen nach Neosalvarsaninjektionen.) M. Kraupa-Runk.
103 *Connection Between the Pituitary Body and Diabetes Insipidus. (Ueber die Beziehung des Diabetes insipidus zur Hypophyse und seine Behandlung mit Hypophysenextrakt.) G. Hoppe-Seyler.
104 Antityphoid Vaccination and Enlargement of the Spleen Persisting Possibly to the Tenth Week. (Typhusschutzimpfung und Milzschwellung.) H. Kämmerer and R. W. Woltering.
105 *Ligation of Femoral Vein in Sepsis after Wound of the Leg. (Ueber Venenunterbindung wegen Pyämie nach Extremitätenverletzungen.) F. Rost.
106 Later Care of Infected Fractures of Upper Arm and Thigh. (Zur Versorgung schwer infizierter Schussfrakturen der Diaphysen des Oberarms und Oberschenkels im Heimatlazarett.) E. Menne.
107 Plastic Operations on the Skull. (Zur Technik der Schädelplastik.) A. Hofmann.
108 *Abortive Treatment of Syphilis. (Ueber Abortivkuren der Syphilis mit Salvarsan und Neosalvarsan.) E. Freund.
109 *Silver Nitrate Enemas for Diarrhea of all Kinds. (Ein wirksames Verfahren gegen Durchfälle aller Art: verdächtige und unverdächtige.) T. G. Rakus.
110 Kaolin Crowds Out the Pyocyaneus. (Bolus gegen Pyozyaneus.) Holzapfel.
111 Support for Peroneus Paralysis. (Einfache Stützen für Peroneuslähmung.) Nieny.
112 Bacteriology of Dysentery in the War. (Zur Bakteriologie der Ruhr im Kriege.) E. Seligmann.
113 Paper Finger Cots. (Ersatz für Gummifingerlinge.) H. Hecht.
114 Constricting Band Brings Out Eruption in Early Stage of Typhus. (Die künstliche Stauung als diagnostisches und differentialdiagnostisches Hilfsmittel beim Fleckfieber.) C. Dietsch.
115 Advantages of Sugar for Dressing Wounds. (Bemerkungen zur Wundbehandlung mit Zucker.) E. Meyer.

98. **Motor Response of Stomach to Cold and Warm Drinks.**—This communication from the official Roentgen laboratory at Vienna, in charge of Holzknecht, reports extensive research in this line. The findings in fifteen cases are tabulated, and demonstrate that the individual stomach may respond in the same way to intake of fluid, regardless of its temperature, passing it along at once or not, according to its usual behavior, whether the fluid is very hot or very cold or tepid. In one healthy person and in three with various gastro-intestinal disturbances, cold water set up very lively peristalsis while hot water did not. This response was constant in each case, but no reason for this different behavior of the stomach could be discovered.

101. **Physical Measures in Treatment of Whooping Cough.**—Ebstein remarks that too little attention has been paid to the simple maneuver for controlling the paroxysm in whooping cough to which O. Naegeli called attention twenty years ago. It relieves the disease of its most dreaded features, and the mother or nurse or the child himself can apply it. Unfortunately, however, it requires vigorous inhalation to open the vocal cords, and hence the measure cannot be applied to quite young children. In such cases Ebstein has found that diathermia of the larynx, applied from each side, has a remarkable attenuating effect on the whooping cough, transforming it into merely an ordinary cough. He says that the effect is amazing in whooping cough at any age. The night rest is no longer disturbed. Ordinary electricity is not enough; it must be the electric waves of the diathermia technic, applied for five or ten minutes, once or twice, to each side of the neck with a current of 0.25 to 0.6 ampere. The diathermia technic causes no sensation except that of warmth, so that children do not object to it. He has applied it successfully to two children of 4½ and 11, the latter not taking any medicine.

103. **Pituitary Treatment in Diabetes Insipidus.**—Hoppe-Seyler supplements his article, summarized in abstract 77 on page 314, January 22, and gives a review of some additional literature. It includes Kleeblatt's case in which diabetes insipidus developed after an accident injuring the skull. Under pituitary extract, the polyuria subsided, but the thirst and excessive sweating persisted. The hypophysis was found intact, the trouble being from chronic irritation of the floor of the fourth ventricle. This case corroborates that when hypophysis extract modifies the whole clinical picture, as in Hoppe-Seyler's case, this can be accepted in differential diagnosis of a pituitary affection.

105. **Ligation of Vein in Pyemia Consecutive to Wounds of the Extremities.**—Rost threw a ligature around the femoral vein in two cases of severe and menacing septic conditions with repeated chills or embolic processes. In both cases the effect was excellent, no further chills followed and the temperature gradually subsided. In both cases the sepsis had followed amputation, and both men evidently owed their lives to the ligation of the vein above.

108. **Abortive Treatment of Syphilis.**—Freund gives the details of forty-six cases of syphilis given salvarsan or neosalvarsan to abort it in its incipiency. Thirty of the men have been under observation for a year or more and eleven for from six months to a year. When the Wassermann was

negative at the beginning of treatment, complete success was constant, but with strongly positive Wassermann the outcome was less reliable, and three of the men had neurorecurrences and two others developed symptoms several months later.

109. **Treatment of Diarrhea.**—Rakus reports excellent results in treatment of diarrhea of all kinds from rectal injection of 25 gm. of 2 per cent. solution of silver nitrate in half a liter of tepid water, the patient in the knee-elbow position. The enema is retained as long as possible, squeezing the parts to hold it in. No water is permitted during the entire course—merely a swallow of hot Russian tea every half hour the first day. The second day a little thin soup is permitted, and the third day thin or thick soup. The fourth day a little zwieback is added, and by the fifth day the ordinary diet can be resumed. One or two enemas often answered the purpose; in others eight or more were required. One of his patients was a girl of 13 with typhoid. She received the same treatment as the others, and had no fever after the second week. He gives two of these enemas a day in the severer and febrile cases.

Therapeutische Monatshefte, Berlin

December, 1915, XXIX, No. 12, pp. 645-692

116 Present Status of Intraspinal Salvarsan Treatment of Syphilitic Disease of the Central Nervous System. (Die endolumbale Salvarsantherapie bei syphilitischen Erkrankungen des Zentralnervensystems.) O. Naegeli (Bern).

117 Combined Pyramidon and Baths in Treatment of Typhoid. (Kombinierte Pyramidon-Bädertherapie bei Unterleibstyphus.) C. Wortmann, A. Hackradt and M. Quirin.

118 Complete Cure in Two Cases of Gangrene of the Lung under Systematic Abstention from Fluids. (Zur Therapie des Lungenbrandes durch Trockendiät—Durstkur.) Halbey.

Gazzetta degli Ospedali e delle Cliniche, Milan

January 16, XXXVII, No. 5, pp. 65-80

119 *Aphonia with Mitral Stenosis. (L'afonia nei vizi mitralici.) L. R. Lanza.

120 Improved Technic for Determination of Cholera Germs in Stools. (Sopra un nuovo metodo di ricerca e di isolamento del vibrione colerigeno nelle feci.) A. Marassini.

January 20, No. 6, pp. 81-96

121 Bridge Plaster Casts. (Le indicazioni degli apparaecchi gessati discontinui, a ponte od anse.) F. Lastaria.

119. **Aphonia with Valvular Defect.**—Lanza reports three cases of aphonia with mitral stenosis. In one the heart was much enlarged and the left recurrent nerve was compressed, entailing almost complete paralysis of the muscles. Under treatment to restore compensation to the heart, the voice improved and kept good for six months. Then with failing compensation total aphonia returned. The man of 32 died suddenly not long after. In a second case there was paresis limited to abduction of the left vocal cord. As the heart action improved under treatment, the voice returned but was still hoarse. In a third case the aphonia was due to an edematous condition of the vocal cords in a case of mitral stenosis with partial adhesive pericarditis. The voice came and went at times, in this case, as the cords increased or diminished in size.

Pediatria, Naples

January, XXIV, No. 1, pp. 1-64

122 *Tartar Emetic in Treatment of Leishmaniosis in Children. (La cura specifica della leishmaniosi nei bambini.) R. Jemma.

123 Vaccine Therapy of Typhoid. (Osservazioni cliniche sull'influenza curativa di un nuovo vaccino antitifoso.) G. di Cristina.

122. **Leishmaniosis in Children.**—Jemma reiterates that we now have in tartar emetic a specific for leishmaniosis in children, so that the problem of treating this terrible disease is completely solved. The results in his thirty-one cases, he says, were marvelous. (A number of articles on tartar emetic in treatment of leishmaniosis are listed in the Index to the last two volumes of The Journal, nearly all summarized in the abstract department.)

Policlinico, Rome

January 16, XXIII, No. 3, pp. 69-100, Baccelli Memorial Number

124 Sodium Citrate in Treatment of Pell gra. (Risultati di alcune esperienze curative della pellagra col citrato trisodico.) G. Alessandrini and A. Scala.

125 Strained Heart. (Esistono lesioni di miocardite acuta nella stanchezza di cuore?) G. Galli.

Semana Medica, Buenos Aires

December 2, 1915, XXII, No. 48, pp. 659-686

126 Vaccine Therapy with Heterovaccines. (Bacterioterapia y Heterobacterioterapia.) S. Mazza.

127 *Viability of the Prematurely Born. (Viabilidad del debil congenito.) F. A. Deluca.

128 Some Argentine Mosquitoes. (Contribucion al estudio de los anofelinas argentinos.) A. Neiva.

December 16, No. 50, pp. 715-742

129 Diagnosis of Twin Pregnancy. (La intensidad de un unico foco de auscultacion fetal puede ser signo patognomonico de ciertos embarazos supuestos o no gemelares?) E. A. Boero.

December 23, No. 51, pp. 743-770

130 *Intravenous Injections of Sodium Salicylate in Acute Articular Rheumatism. (Las inyecciones endovenosas de salicilato de sodio en el reumatismo articular agudo.) P. V. Cernadas.

December 30, No. 52, pp. 771-800

131 Management of a Case of Diphtheria. (Tratamiento de la difteria.) R. Cabrera.

132 Tests of Kidney Functioning. (Examen funcional del riñon. Metodos principales y de aplicacion practica.) A. Viton. Commenced in No. 50.

133 *Statistical Study of Induced Pneumothorax in Treatment of Pulmonary Tuberculosis. C. Ferreira.

127. **Viability of the Prematurely Born.**—Deluca gives an illustration of a child born three months before term, weighing only 1,000 gm., while the placenta weighed 360 gm. The child was wrapped in cotton and placed, in bed with its mother, and was thriving well at the fifth week, the date of writing. He tabulates the details of seventy-five other prematurely born infants from the hospital records. Only eleven survived, including some born at the sixth or seventh month. The smallest of the children that survived weighed 1,200 gm.

130. **Intravenous Salicylic Medication.**—Cernadas reports the case of a man of 25 with extremely severe febrile rheumatism involving all the joints, with myocarditis and dyspnea, the stomach absolutely intolerant, especially for the salicylates. He then made an intravenous injection of 6 c.c. of a mixture of 5 gm. sodium salicylate and 0.25 gm. caffein in 25 gm. distilled water. The injection was repeated daily for six days, increasing the amount from 1.2 to 2 gm. By the fourth day the man was able to sit up, with normal temperature, pulse 84, and no further precordial distress.

133. **Induced Pneumothorax.**—Ferreira is president of the Liga Paulista contra la Tuberculosis and chief of an antituberculosis dispensary. He reviews here the statistics in regard to therapeutic pneumothorax published by Saugman (113 cases followed to date of writing); Molon (45); Leysin clinic (23); Carpi (36); Pisani (104); Cionini (53), and a number of others. His conclusions from this review are to the effect that even perfected technic has not entirely suppressed all danger from the procedure. Gaseous embolism is the principal danger; this is caused by alveolar air being drawn into a vein in the lung which has been injured by the needle introduced or by the tuberculous process itself. Transient benefit is relatively common; the immediate benefit is frequently due to suggestion alone. The proportion of cases showing radical improvement is unquestionably limited, and a clinical cure should not be spoken of until an interval of one or two years has elapsed. He joins with Carpi, Moreli and Maragliano in protesting against the abuse of this therapeutic measure, urging that greater heed should be paid to the limitations set by Forlanini himself.

Hospitalstidende, Copenhagen

January 19, LIX, No. 3, pp. 45-68

134 Vaccine Therapy of Typhoid; Nineteen Cases. (Forsøg med Vaccinebehandling ved Tyfus.) C. N. Würtzen.

January 26, No. 4, pp. 69-92

135 Dentistry Methods Applied in Treatment of Fracture of the Jaw. (Tandlægebehandlingen ved Skudfrakturer af Kæberne.) O. Bjerrum.

136 Anemia with Chronic Polyarthritis. H. Jansen.

Ugeskrift for Læger, Copenhagen

January 13, LXXVIII, No. 2, pp. 33-64

137 Paratyphoid; Two Cases, Traced to Veal. (To Tilfælde af Paratyfus, formentlig Kalvekødforgiftning.) S. Hornemann.

138 Unusual Longevity of Inhabitants of Danish District. (De Gamles Land.) R. Oppermann.

139 Treatment of Chronic Tuberculous at Copenhagen. (Om Behandling af Patienter med kronisk Lungstuberkulose i København.) K. Lundh.